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W. H. HART.

SAFETY GUARD FOR OPEN CARS.

No. 517,339. Patented Mar. 27, 1894.

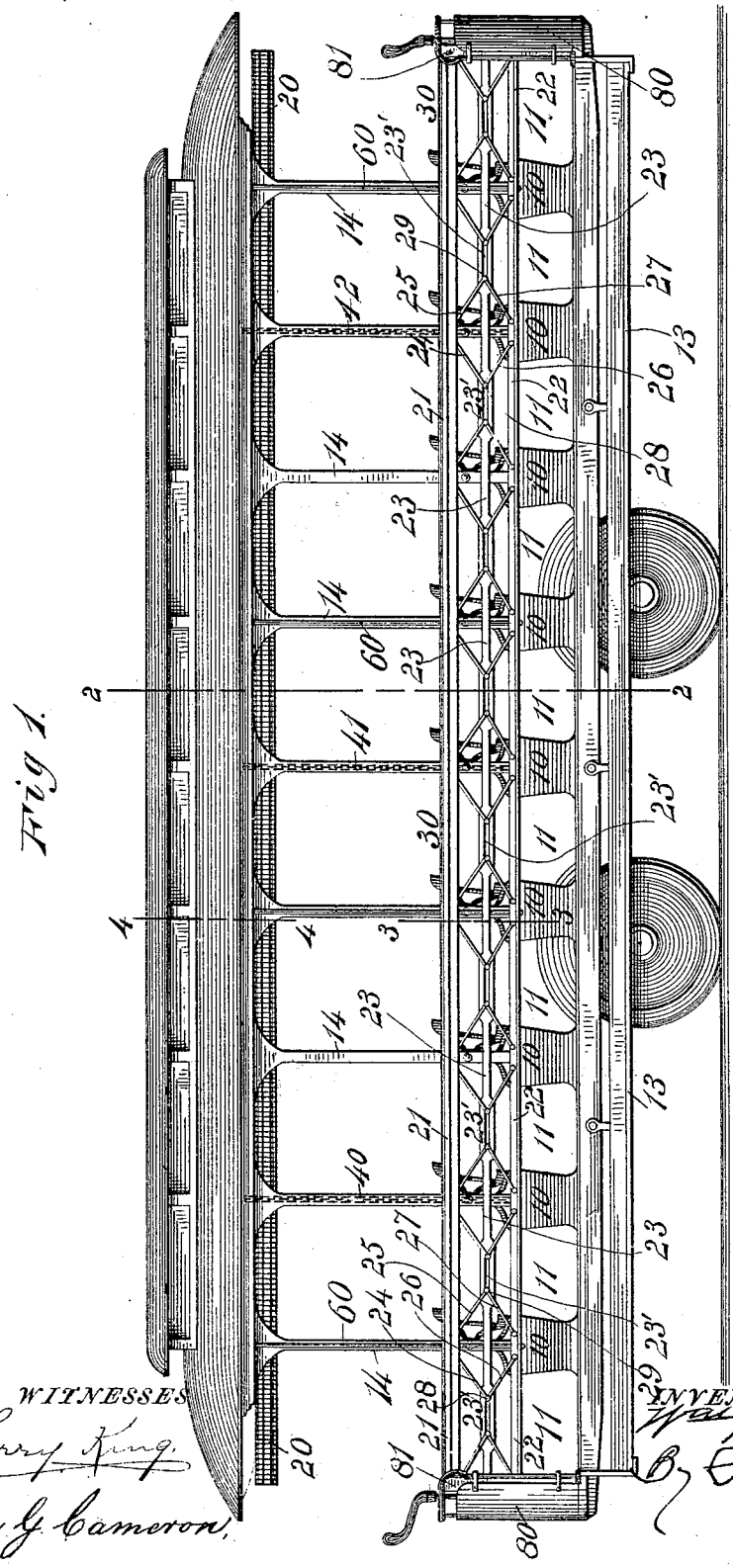

Fig 1.

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Fig 2.

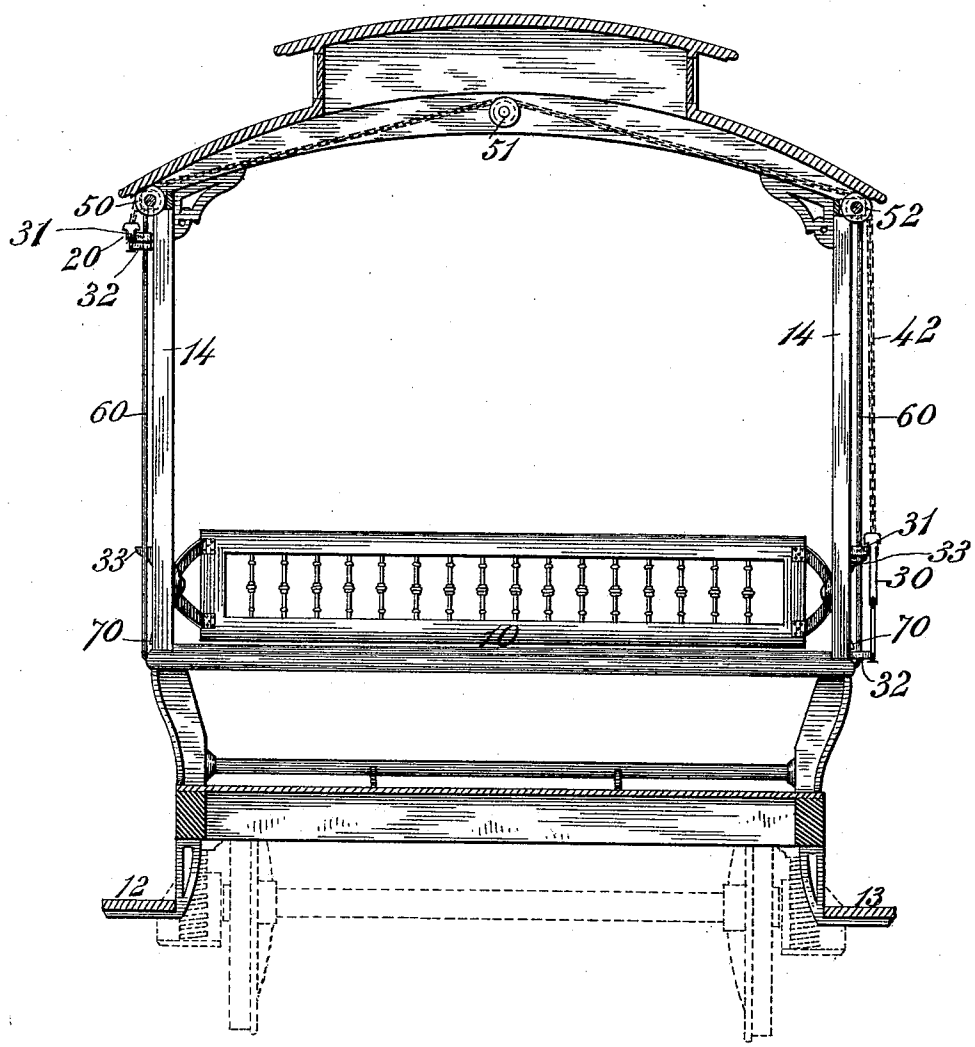

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Fig 3.

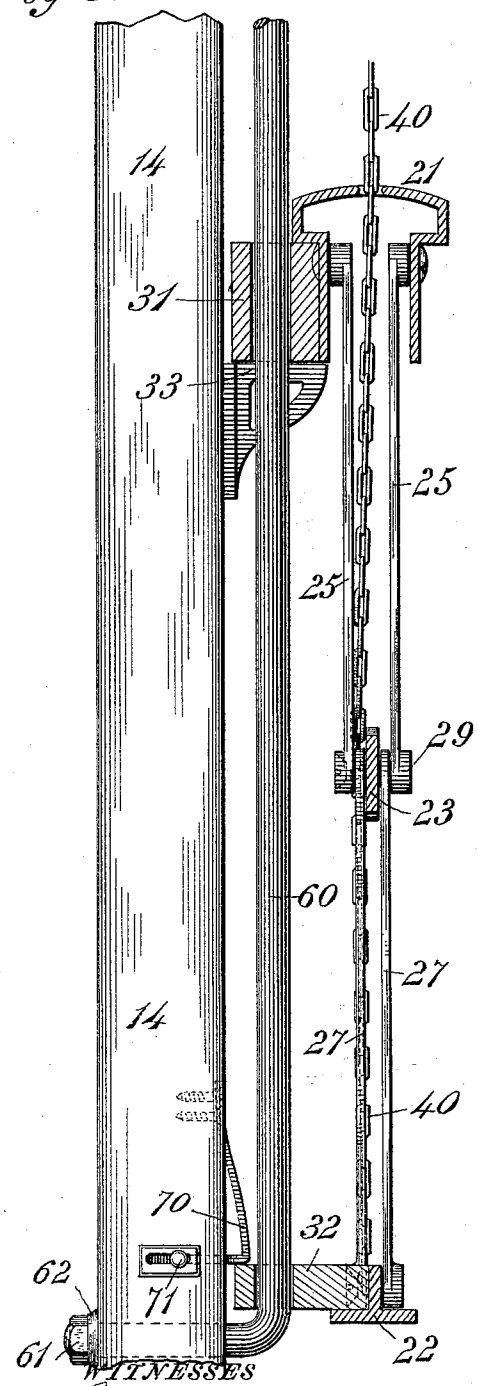

Fig 4.

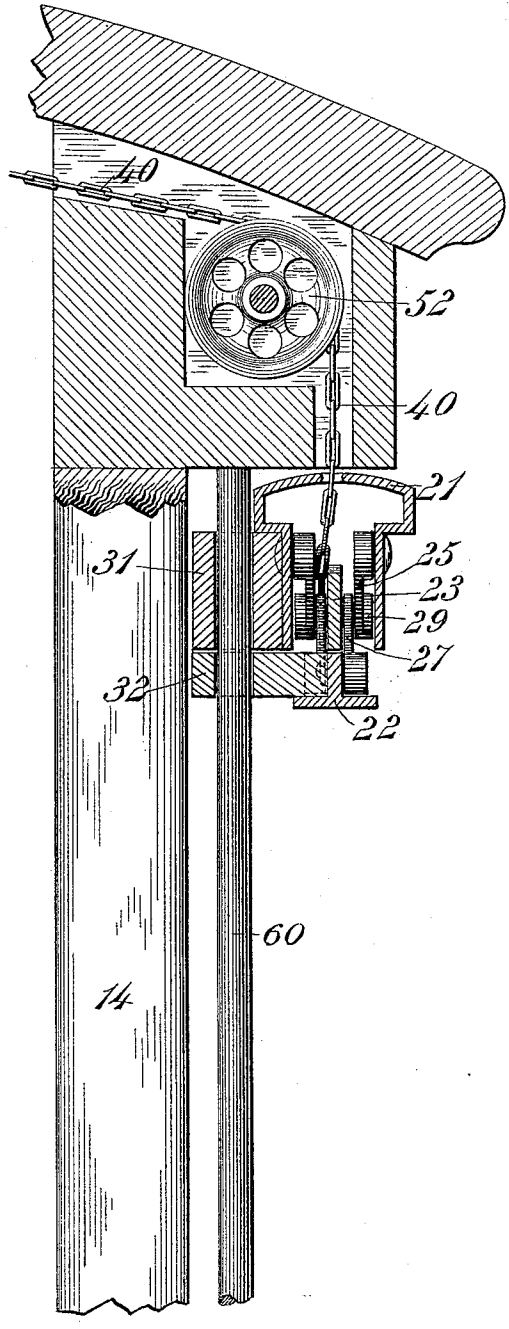

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Fig 6.

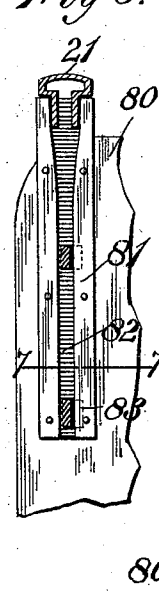


Fig 5

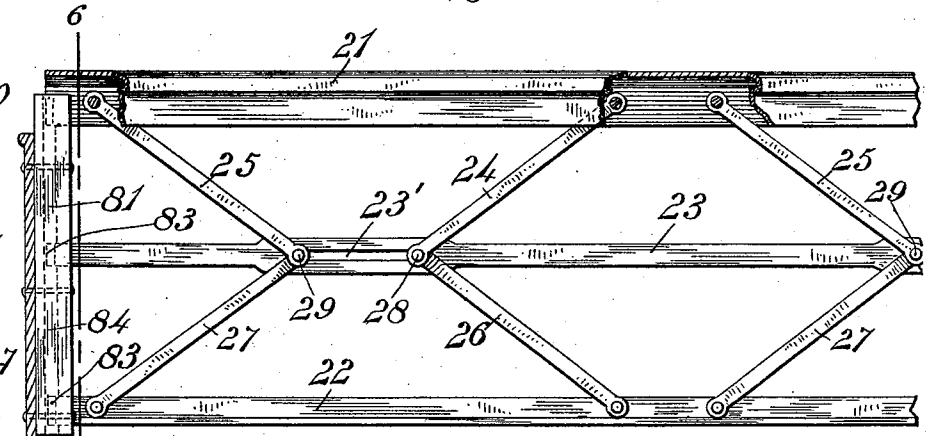


Fig 7.

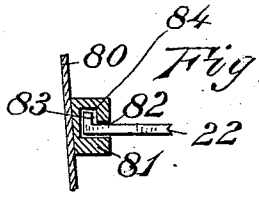


Fig 9.

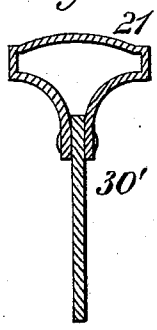
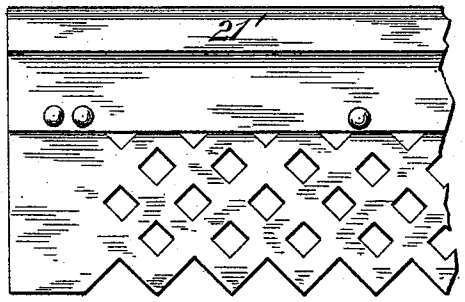


Fig 8.



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SAFETY-GUARD FOR OPEN CARS.

SPECIFICATION forming part of Letters Patent No. 517,339, dated March 27, 1894.

Application filed December 13, 1893. Serial No. 493,652. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY HART, a citizen of the United States of America, residing at Chelsea, in the county of Suffolk, in the State of Massachusetts, have invented certain new and useful Improvements in Safety-Guards for Open Street-Cars, of which the following is a specification.

This invention relates to safety guards for preventing entrance and exit on the danger side of open street cars. The danger side herein referred to is the side next the adjacent track on which cars move in the opposite direction; and when a car is switched from one track to the other at the end of the route or other point where its course is reversed, the position of the car in its relation to the adjacent track is changed, and what was formerly the safe side becomes the danger side, and the side formerly dangerous becomes safe.

The objects of this invention are to provide safety guards for opposite sides of the car, which will not disfigure its appearance, and which can be readily shifted with slight effort and without annoyance to the passengers remaining in the car, into open position on the outer or safe side of the car and into closed position on the inner or dangerous side thereof.

The invention embraces two guards or gates extending longitudinally of the car on opposite sides thereof and suspended from opposite ends of transverse flexible supports which pass over pulleys in the roof or upper part of the car in such a manner that when either gate is down, closing the several passage ways at one side of the car, the other gate is up, leaving open the opposite ends of the passage ways on the other side of the car; the shifting of one involving the simultaneous shifting of the other. The gates are preferably of collapsible structure so as to fold into compact form when in raised open position and means are preferably provided for locking each in closed position.

Figure 1 of the accompanying drawings represents a side elevation of an open street car provided with these improved safety guards. Fig. 2 represents a transverse section thereof on line 2—2 of Fig. 1. Fig. 3 represents an enlarged transverse section on line 3—3 of Fig. 1 of one of the collapsible guards in connection with a fragment of one of the side posts of the car, said guard being in down or closed position. Fig. 4 represents an enlarged transverse section of a fragment of the car body on line 4—4 of Fig. 1 and of the same guard in a collapsed and open position. Fig. 5 represents an enlarged side elevation of a fragment of one of the collapsing guards, portions of the upper rail being broken out. Fig. 6 represents an enlarged transverse section on line 6—6 of Fig. 5 of the collapsing guard and a fragment of the dash-board provided with a guide for receiving one end of the guard. Fig. 7 represents a horizontal section on line 7—7 of Fig. 6 of the dash-board and lower rail of the guard in the guide way attached to said dash-board. Fig. 8 represents a side elevation of a fragment of one of the guards in the form of a non-collapsible gate. Fig. 9 represents a transverse section of the guard illustrated in Fig. 8.

The same reference numbers indicate the same parts in all the figures.

The open summer street car is usually constructed with a number of facing or reversible transverse seats as 10 alternating with transverse passages, as 11, said passages being open at their opposite ends on both sides of the car, and with platform steps 12 and 13 suspended from the side sills of the car body and extending longitudinally thereof, serving as means of ingress and egress to and from the passages between the seats.

In this invention two vertically movable guards or gates, as 20 and 30, are suspended on opposite sides of the car from opposite ends of flexible supports, as 40, 41, and 42, each of which passes over suitable guides, as 50, 51 and 52, disposed in the upper part or roof of the car. Each guard or gate is preferably of such length as to close all the passages 11 on one side of the car and the flexible supports 40, 41 and 42 are of such length that when a guard of one side is down in closed position, the guard of the other side is raised in open position. The weight of one guard counterbalances that of the other and when one guard is moved up the other descends of its own weight, it being only necessary to overcome the friction of the supports to effect the simultaneous shifting of

both guards. The flexible supports are preferably in the form of chains and the guides are preferably in the form of sprocket wheels or pulleys.

Suitable ways are provided on which the gates may slide. For this purpose the car herein shown is provided at each side with two or more vertical rods, as 60, preferably disposed opposite the side posts 14. These rods extend from a point at or near the roof of the car to points opposite the seats thereof. Their upper ends may rest in sockets in the purlins and their lower ends may be bent at right angles and passed through the posts 14, in which case nuts, as 61, and washers as 62, may serve as fastening devices. Any other suitable attaching or fastening means may be employed. There may be as many rods as there are side posts or a less number as desired. These rods are preferably composed of brass, bronze or any other unoxidizable metal, and they preferably stand out from the posts a sufficient distance to admit the hand between them and the posts, whereby they are adapted to serve as handles to be grasped by the passengers on entering. The gates 20 and 30 are adapted to move up or down on the ways or rods by any suitable means, a convenient means being hereinafter described.

Locks are preferably provided for holding the gates in closed position when lowered. These locks are preferably automatic in their action and may be in the form of spring catches, such as 70, disposed at the side posts or other convenient points, preferably near the ends of the car, where they are easily accessible to the driver and conductor. These catches are set in slots formed in the posts or in boxes attached thereto and latch over the gates when lowered. These catches are provided with knobs, as 71, by which they may be released when the gate is to be opened. These guards as 20 and 30 may be in the form of bars, or ornamental structures as indicated in Fig. 8; but they are preferably in the form of a folding or collapsible gate so that each when in raised position occupies a small space in the top of the car and constitutes a wide gate when in closed position.

The collapsible gates illustrated in Figs. 1, 2, 3, 4 and 5 are each composed of three bars, a top bar 21, a bottom bar 22, and an intermediate bar 23. The intermediate bar is provided with longitudinal slots, as 23′, disposed at intervals along its length. Links 24 and 25 are pivoted to the top bar and diverge in opposite directions therefrom when the gate is in open position, and links 26 and 27 are pivoted to the bottom bar and extend upward therefrom at angles of opposite inclination. The links 24 of the top bar are united at their lower ends with the upper ends of the links 26 of the bottom bar by means of pivot pins 28 which pass through and slide in the slots 23′, and the links 27 of the bottom bar are connected at their upper ends with the lower ends of the links 25 of the top bar by means of pivot pins 29 which pass through and slide in the same slots 23′. The links of the top bar are preferably double as shown. This connection of the bars enables them to fold and expand in a sort of lazy-tongs movement. The bars are preferably constructed of sheet metal and the top bar 21 is preferably hollow, whereby it is adapted to receive the intermediate and bottom bars when the gate is folded or collapsed, as illustrated in Fig. 4. The ends of the flexible supports 40 are connected with the lower bar so as to effect the folding of the gate when lifted. The top and bottom bars are provided with perforated lugs or straps 31 and 32 which encircle the guide ways or rods 60 and cause the gate to slide on said rods. Stops 33 are attached to the side posts on opposite sides of the car near the ends thereof and serve to arrest the top bar of either gate when lowered.

The ends of the gates may or may not be adapted to engage the dash-board in some manner. Such engagement is not necessary but may be done if desirable. A convenient means of effecting this connection is illustrated in Figs. 5, 6 and 7.

The dash-board, as 80, is provided at its opposite ends on its inner face with a vertical bar, as 81, provided with a guide way 82, said guide way being flared at its upper end and adapted to receive the lower body portion of the top bar 21 of the gate, and the lower portions of the guide way being adapted to receive the ends of the intermediate and bottom bars. The ends of these latter bars may be provided with L-shaped hooks 83 which engage an undercut recess 84 in said guide way as shown in Figs. 6 and 7. The flaring of the upper end of the guide way facilitates the entry of the gate thereinto.

In the use of this safety guard for street cars, the gate of one side is in raised open position while the gate of the opposite side is in lowered or closed position. The gates 20 and 30 being in the respective positions shown in Fig. 2, in which the former is in open and the latter in closed position, and it being desired to reverse the positions of the gates owing to the change of direction of the car, the locks as 70, at the opposite ends of the gate 30 are released by the conductor and driver respectively, and said gate is raised by them. This raising of the gate 30 causes the descent by gravity of the gate 20 on the opposite side of the car, and the upward movement of one and the descent of the other continue until the gate 20 closes the passage ways at its side of the car and is engaged and locked by the automatic locks on that side. When the top bar of the gate 30 reaches the upper end of the guide rod 60 it comes in contact with the roof of the car, and the bottom bar continues to move upward and causes the collapsing or folding of the gate, the intermediate and bottom bars being raised into the hollow top bar, whereby the closed gate

occupies a very narrow space at the top of the car and does not disfigure the appearance thereof.

I claim as my invention—

1. The combination with an open street car of vertically sliding gates extending along the sides thereof, flexible supports extending transversely through and depending on opposite sides of the car and connected at their opposite ends to said gates, and guides for said supports.

2. The combination with an open street car of flexible supports extending transversely through its upper part and depending on its opposite sides, vertically sliding gates extending along the sides of the car and attached to the opposite ends of said supports, guides for said supports, and means for locking each gate in lowered position when closed.

3. The combination with an open street car provided with vertical guide rods on its opposite sides, of gates extending longitudinally of the car on opposite sides thereof and movable vertically on said guide rods, flexible supports connected at their opposite ends to both of said gates, and guides in the upper part of the car over which said flexible supports are adapted to move in raising the gate of one side while lowering the gate of the other side.

4. The combination with an open street car of flexible supports extending transversely through its upper part and depending on its opposite sides, vertically sliding gates extending along the sides of the car and attached to the opposite ends of said supports, means for guiding said supports, and means attached to the dash-boards of the car for receiving and guiding the ends of said gates.

5. The combination with an open street car of a narrow expansible and collapsible gate extending longitudinally along the sides thereof and movable bodily from a point near the seats to a point near the roof, cords for suspending said gate, and stops which arrest the top bar of said gate when it reaches its lowered position.

6. The combination with an open street car of flexible supports extending transversely through its upper part and depending on its opposite sides, vertically sliding gates extending along the sides of the car and attached to the opposite ends of said supports, and means for guiding said flexible supports, each of said gates being collapsed when in upward open position and expanded when in lowered closed position.

7. The combination with an open street car provided with vertical rods at its sides, of sliding gates provided with means for engaging said rods, and flexible supports connected at their opposite ends to the gates on opposite sides, and guides in the upper portions of the car for said flexible supports.

8. The combination with an open street car provided with dash-boards having guide ways flared at their upper ends, of vertically sliding gates on opposite sides of said car adapted to engage said guide ways.

9. The combination with an open street car provided with dash-boards having guide ways flared at their upper ends, of vertically sliding gates on opposite sides of said car adapted to engage said guide ways, and flexible supports connected at their opposite ends to said gates, and guides in the upper part of the car over which said supports play in the shifting of the gate.

10. The combination with an open street car of vertically sliding gates on opposite sides thereof, and means for connecting said gates whereby one moves upward while the other moves downward.

11. The combination with an open street car of two folding gates extending along opposite sides thereof, the upper bar of each folding gate being adapted to receive the lower bars thereof when the gate is collapsed, and means for connecting said gates and moving them in unison.

12. The combination with an open street car provided with vertical rods along the sides thereof, of two vertically sliding folding gates extending longitudinally along the sides of the car, each gate having a hollow bar adapted to receive the other bars thereof when the gate is folded, and flexible supports connected at their opposite ends with the lower bars of said gates.

13. In a folding gate, the combination of three longitudinal bars, the intermediate bar being provided with longitudinal slots, and pivoted links connecting the bottom and top bars, the inner meeting ends of the links being adapted to slide in the slots of the intermediate bar.

14. In a vertically sliding collapsing gate, the combination of three longitudinal bars, the intermediate bar being provided with longitudinal slots, links connecting said bars, and pivot pins connecting the inner ends of said links and being adapted to slide in said slots, one of the bars being hollow and adapted to receive the other bars when the gate is folded.

15. The combination with an open street car of vertically sliding gates extending along opposite sides thereof, vertical guide rods attached to the side posts, on which said gates move, stops on said post for engaging said gates when in closed position, and means for connecting said gates and moving them in unison.

16. The combination with an open street car, the side posts of which are provided with guide rods and stops, of folding gates movable vertically on said rods and adapted to engage said stops, and means for connecting said gates and moving them in unison.

17. In a folding gate, the combination of a plurality of bars, one of which is provided with longitudinal slots, and pivoted links connecting said bars, one set of pivots for said links being movable in said slots to permit

the straight folding of the gate, and one of said bars being hollow to receive another bar when the gate is folded.

18. In a folding gate, the combination of a plurality of bars one of which is provided with longitudinal slots, and pivot links connecting said bars, one set of pivots for said links being movable in said slots to permit the straight folding of the gate.

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