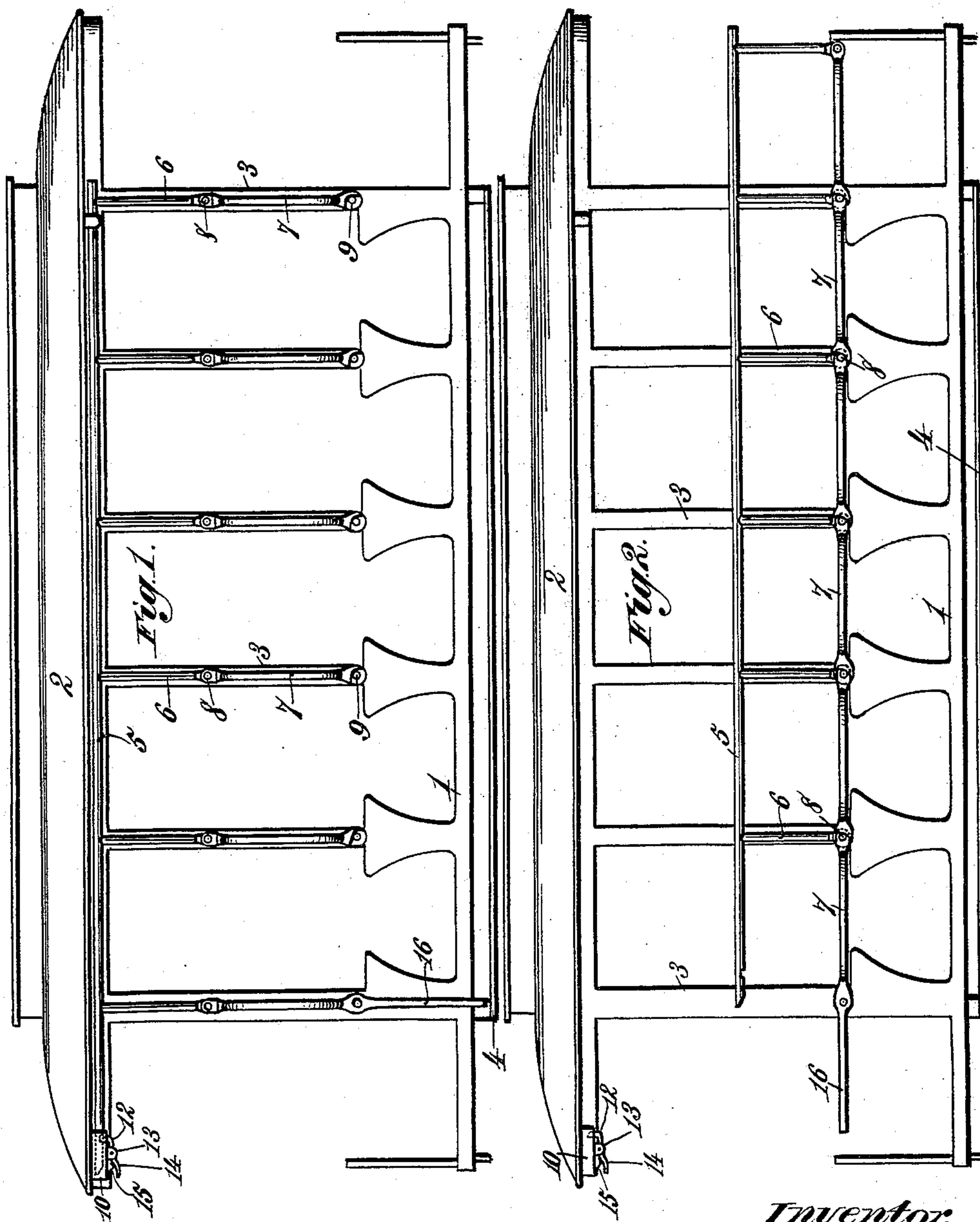


(No Model.)

S. A. GROFF.  
SAFETY GUARD FOR CARS.

No. 539,735.

Patented May 21, 1895.



Witnesses:  
*Robert G. Smith.*  
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Atty.



# UNITED STATES PATENT OFFICE.

SAMUEL A. GROFF, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF NINE-SIXTEENTHS TO PATRICK JAMES A. SMITH AND W. KESLEY SCHOEPP, OF SAME PLACE.

## SAFETY-GUARD FOR CARS.

SPECIFICATION forming part of Letters Patent No. 539,735, dated May 21, 1895.

Application filed November 3, 1894. Serial No. 527,788. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL A. GROFF, a citizen of the United States, residing at Washington city, in the District of Columbia, have  
5 invented new and useful Improvements in Safety-Guards for Cars, of which the following is a specification.

This invention relates to safety-guards for open or summer railway cars, either surface  
10 or elevated, and operated by cables, electric power, or otherwise, and wherein guard-rails are connected by links with the car-body and are raised or lowered by swinging the links on their lower pivots. As heretofore constructed, the guard-rails are lowered in juxtaposition to the car floor for the entrance  
15 and exit of passengers, which is disadvantageous and objectionable, in that the rails are liable to trip passengers, or in a measure obstruct the passage of persons. The prior  
20 arrangement is not susceptible of practical use with the usual under curves or swells at the sides of ordinary surface railway cars, and moreover when the rails are collapsed to their lowest position to remove them as barriers or guards, the links cannot serve as  
25 handle-bars to aid passengers in entering or leaving the car, nor can such links be utilized as a secondary guard-rail.

30 The objects of the invention are to avoid the disadvantages and objections alluded to; to provide novel means whereby the guard-rails are lowered from the top or roof of the car by the swinging of jointed supports to place the rails in position to serve as barriers  
35 or guards, and are raised to or near the top or roof of the car to open the passage ways and permit persons to enter or leave the car; and to provide novel guard-rail supports which serve as handle-bars when they stand  
40 vertical, to aid passengers in entering or leaving the car, and when lowered into a horizontal position constitute a secondary guard-rail about on a level with the car-seats.

45 To accomplish all these objects, the invention consists in the combination with a railway passenger car, of pivoted handle-bars, and a guard-rail having pendent arms pivoted to the handle-bars, so that the guard-

50 rail is lowered from the top or roof of the car to serve as a barrier or guard by the swinging of the handle-bars and arms in a downward direction.

The invention also consists in the combination with a railway passenger car, of a  
55 guard-rail adapted to lie horizontally at the top or roof of the car, and provided with rigidly attached pendent-arms, and supporting bars pivoted at their lower ends to parts of the car-body, and at their upper ends to the  
60 said arms, so that the guard-rail is lowered from the top or roof of the car to serve as a barrier or guard when the bars are swung in a downward direction.

The invention is illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation showing a portion of a car with the improved safety-guard in its normal position to permit passengers to enter and leave the car. Fig. 2 is a similar  
70 view showing the guard-rail lowered to serve as a barrier.

In order to enable the invention to be clearly understood, it will now be described in detail, referring to the drawings, wherein—

75 The numeral 1 indicates the floor portion of a railway passenger-car, 2 the top or roof portion, and 3 the usual standards extending from the floor portion to the roof portion, and between which the passengers enter and leave  
80 the car at either side thereof.

The car is designed as an open or summer car, and is provided at each side with a horizontal running-board 4 which serves as a step for the passengers to conveniently enter or  
85 leave the car.

The guard-rail 5, which is designed to be adjusted to the position shown in Fig. 2, for the purpose of serving as a barrier to prevent passengers conveniently entering or leaving  
90 the car at either side thereof, is preferably composed of a cylindrical metal rod arranged horizontally, and provided with a plurality of rigidly attached pendent-arms 6. The number of arms preferably corresponds with the  
95 number of standards 3, and when the parts are in their normal position, represented in Fig. 1, the rigid arms lie directly in front of



the standards. The lower ends of the arms 6 are pivotally connected with the upper ends of handle-bars 7 through the medium of pivot-pins 8. The handle-bars are arched, so that they present the form of ordinary handles, and permit passengers to insert their hands between the handle-bars and the standards 3. The lower ends of the handle-bars are pivoted to the lower ends of the standards, or to other parts of the car-body in juxtaposition to the level of the car seats through the medium of pivot-pins 9, in such manner that when one of the handle-bars is swung in a downward direction, the horizontal guard-rail 5 will be shifted lengthwise and lowered to the position represented in Fig. 2, in which position it stands about centrally between the top and bottom of the car, and thus acts as a barrier to the passage-ways between the standards 3. It will be obvious that when the horizontal guard-rail is lowered to the position stated it will serve as a safety-guard to prevent persons falling from the car, and also prevent persons conveniently entering or leaving the car.

In the practical use of the invention, one of the horizontal guard-rails, and its operating devices, will be arranged at each side of a car, so that one rail can be lowered while the other remains in its raised position, the lowered rail being used at the danger side of the car as usual in open or summer cars.

By pivoting the arched handle-bars 7 to the lower ends of the standards 3, it is possible to construct the lower portion of the car-body in any form desired, and therefore the invention can be readily applied to those cars having the usual under curves or swells at the sides thereof.

The improvement is very advantageous, in that when the horizontal guard-rail is open or removed from its position as a barrier, it lies at or near the top or roof of the car, and the arms 6 and handle-bars 7 lie directly in front of the standards 3, so that no projecting part presents itself to impede or obstruct passengers entering or leaving the car. This is very advantageous over that type of safety-guards wherein the guard-rail is lowered in juxtaposition to the car floor for the purpose of permitting passengers to enter or leave the car, because in such construction the guard-rail is liable to trip passengers, or, in a measure, obstruct the passage of persons. Furthermore in the prior construction, the pivoted links, which support the guard-rail, are pivoted to the car beneath the car floor, and consequently the prior guard cannot be practicably used in those cars having under curves or swells at the sides thereof.

When the guard-rail is raised to its highest position, as shown in Fig. 1, it is desirable to lock it in such position, so that it will not accidentally descend. This object may be accomplished through the medium of any suitable locking devices, but, as here shown, the locking devices comprise a tube 10, into which

one end of the guard-rail 5 enters when the guard-rail is raised to its normal position at or near the top or roof of the car. The end of the guard-rail entering the tube is confined therein through the medium of a latch 12, pivoted, as at 13, to a lug on the tube, and having a finger-piece, as at 14, acted on by a spring, as at 15, so that when the end of the guard-rail enters the tube it will be automatically engaged by the catch 12, but can be released by pressing on the finger-piece 14, as will be obvious. When the guard-rail 5 is to be lowered to act as a barrier, the finger-piece 14 is operated to disengage the catch 12 from the guard-rail, and then the latter can be lowered by simply swinging one of the arched handle-bars 7 in a downward direction.

In lowering the guard-rail 5, to serve as a barrier to the passages between the standards 3, the guard-rail moves lengthwise, and one end thereof can extend across the front platform to serve as a guard or barrier for the same.

When the rail 5 is in its lowered position, as indicated in Fig. 2, the handle-bars 7 lie horizontal, and the end of one, where pivoted to the rigid arm 6, engages the end of another handle-bar 7 where pivoted to standard 3, so that the handle-bars constitute in fact a rigid secondary guard-rail lying approximately on a level with the car seats. The engagement of one end of a handle-bar with the end of another handle-bar, where pivoted to a standard 3, can be effected in any suitable manner, as for example, by providing the ends of the handle-bars which are pivoted to standard 3 with slots to receive the ends of the handle-bars which are pivoted to the rigid arms 6.

From the foregoing it will be observed that the bars 7 not only constitute handles to assist passengers in entering or leaving the car, but also provide a secondary guard-rail when such handles are swung downward to lower the rail 5 into the position shown in Fig. 2.

The car can be of any construction desired, and may be adapted to travel on surface or elevated railways, and be operated by cable, electric, or other power.

If a guard for the rear platform is desired, the handle-bar pivoted to the rear standard 3, is extended to form an arm or prolongation 16, which assumes the horizontal position shown in Fig. 2, when the handle-bar is lowered to the level of the seats or thereabout.

Having thus described the invention, what is claimed is—

1. The combination with a railway passenger car, of pivoted handle-bars, and guard-rails having pendent-arms pivoted to the handle-bars, whereby the guard-rail is lowered from the top or roof of the car when the handle-bars are swung in a downward direction, substantially as described.

2. The combination with a railway passenger car, of a guard-rail adapted to lie horizontally at the top or roof of the car and provided



with rigidly attached pendent arms, and supporting bars pivoted at their lower ends to parts of the car-body, and at their upper ends to the said rigid arms, whereby the guard-rail  
5 is lowered from the top or roof of the car when the supporting bars are swung in a downward direction, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

SAMUEL A. GROFF. [L. s.]

Witnesses:

ALBERT H. NORRIS,  
NATHAN H. ROBBINS.