(No Model.) 2 Sheets—Sheet 1.

W. GRUNOW, Jr.

FENDER FOR CARS.

No. 566,394. Patented Aug. 25, 1896.

FIG. 1.

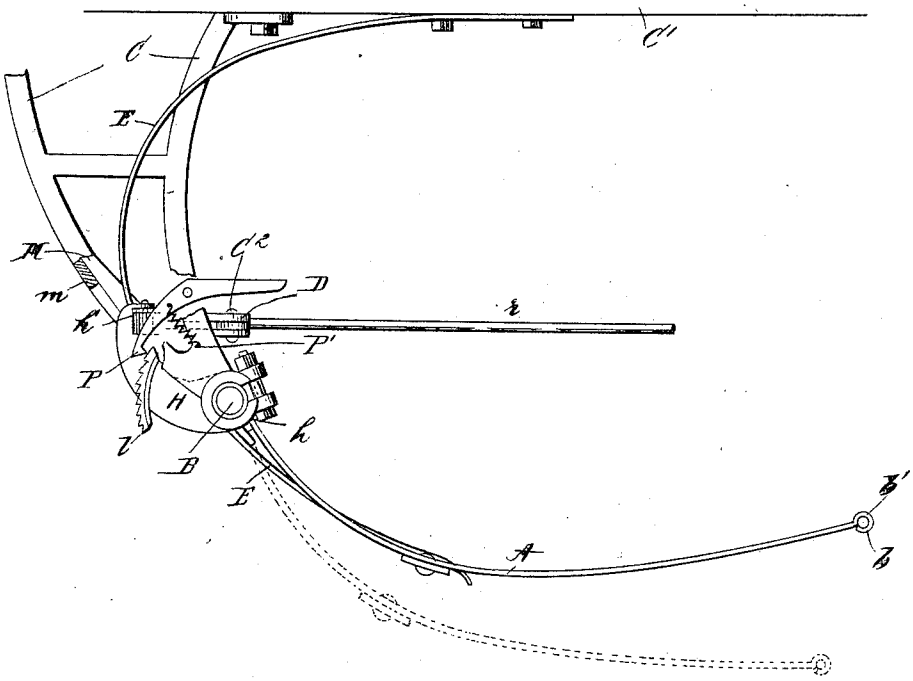
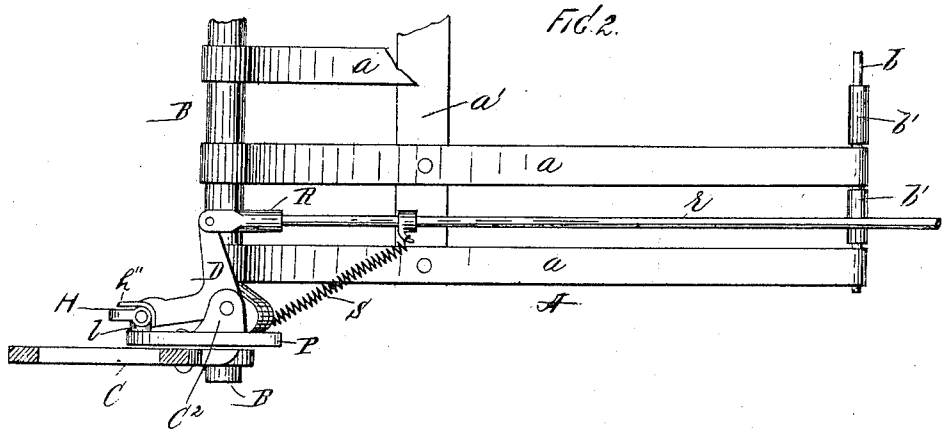


FIG. 2.



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ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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FIG. 3

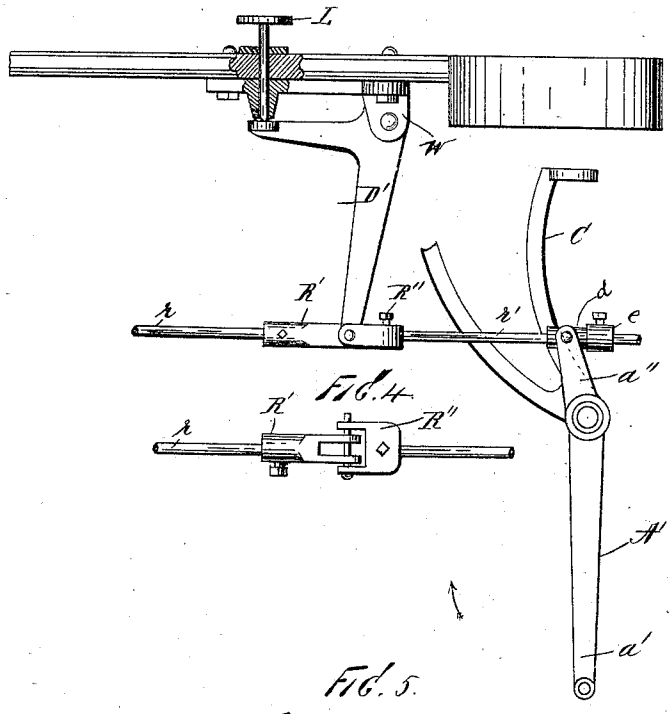
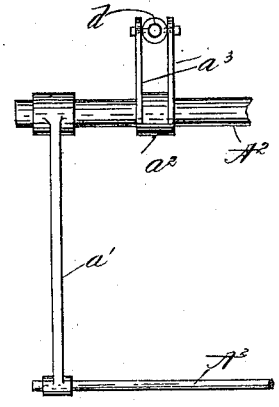


FIG. 4

FIG. 5.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM GRUNOW, JR., OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO ZALMON GOODSELL, OF SAME PLACE.

FENDER FOR CARS.

SPECIFICATION forming part of Letters Patent No. 566,394, dated August 25, 1896.

Application filed December 28, 1895. Serial No. 573,588. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GRUNOW, Jr., a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Fenders for Cars, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts.

This invention relates to fenders or guards for tramway-cars, and particularly to what are known as "trip-fenders;" and the object thereof is to provide an effective device of this class which is simple in construction and operation, and by means of which the serious and sometimes fatal accidents which result from the striking of a person or object by such cars while in motion will be avoided.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a side view of a portion of my improved fender or guard attached to the platform of a car, parts thereof being broken away; Fig. 2, a plan view of a part of said construction, showing also a part of the fender tray or guard proper; Fig. 3, a side view of a part of the tripping mechanism, and Figs. 4 and 5 represent details of the construction.

In the practice of my invention I provide a curved tray or guard, the side of which is shown at A, Fig. 1, and said tray or guard proper is composed of longitudinal strips *a* and a cross-strip *a'*, to which they are secured, said longitudinal strips being constructed of flexible steel and held parallel and apart from one another, the rear end thereof being also rigidly attached to a rock-shaft B in such manner that it is free to rotate with said shaft.

The forward ends of the steel bands forming the tray or fender-guard proper are curved over or provided with eyes or loops, through which is passed a flexible steel rod *b*, on which is mounted between each of the strips *a* rollers *b'*, which form the front edge of the tray or guard and by means of which said front is rendered flexible and is adapted to conform to the uneven surface of the road-bed over which it passes, said rollers being also adapted to aid in this operation. This tray or guard, with its rock-shaft B, is held by hangers C, which are connected with the platform C' of the car, or it may be connected with the trucks thereof or with the car-body itself, as may be most desirable; and secured to the bottom of the platform of the car, or to the truck thereof, are curved flat springs E, the free ends of which bear downwardly upon the fender-tray, so as to keep it under pressure upon the road-bed when released, as hereinafter described. A curved arm H, provided with a clamping-sleeve *h*, is firmly clamped, by means of said sleeve, to the rock-shaft B at one end, and this curved arm carries a strongly-pivoted roller *h'* at its upper end, and also a curved ratchet-plate *l*, which is secured to or formed on its side, and a pawl P, pivotally connected with one of the hangers C, is free to operate in connection with the ratchet-teeth on said plate and to engage therewith, so as to hold and to keep the tray or guard locked when it lies on the ground or road-bed, and in such manner that the tray or guard cannot be raised until the pawl is disengaged from the ratchet *l*; and I also employ a spring P', the object of which is to cause the pawl P to engage automatically with the ratchet-teeth on the plate L, said spring being secured to said pawl and to said hanger, as shown in Fig. 1.

One of the hangers C is provided with a set of parallel jaws C^2, between which is pivoted a crank-lever D, one end of which rests against the roller *h'*, connected with the curved arm H, when the fender is raised from the ground, and is adapted to hold said fender in this position, and the other end of said crank-lever is pivotally attached to a rod-coupling R, to which is secured a rod *r*, which extends to and is connected by means of a similar coupling R' with the crank-lever D', which forms a part of the foot-power releasing or tripping device. An arm M, provided with a clamping-sleeve C, is secured to the other end of the rock-shaft B and rests against the side projection *m*, formed on the adjacent hanger C, when the fender tray or guard is raised and held by the crank-lever D in order to prevent

any upward oscillation or movement of the tray when the car is in motion, which might be caused by jolting or the passage of the car over a rough or uneven track.

The bell-crank D′ of the foot-power releasing or tripping device is pivotally connected with a hanger W, secured to the under side of the platform of the car, as shown in Fig. 3, and a detachable foot-pin L passes through the said platform and through guides or bearings connected therewith, and rests upon the outer end of the crank-lever D′.

Secured to the front end of the car-platform and underneath the same are hangers C′, (also shown in Fig. 3,) and these hangers carry a swinging frame A′, consisting of wrought-iron rods or pipes A^2, held parallel by adjustable sleeve-arms a', and the lower rod or pipe is brought as near the ground or to the rails of the track as is practicable, and this swinging frame A′ forms the tripping or releasing device.

To the upper rod or pipe of the swinging frame A′ is attached an adjustable sleeve a^3, having parallel arms a^3, between which a pivoted guide-sleeve d is held, through which a rod r', attached to the crank-lever D′, passes, and the clamping-sleeve e, (shown in Fig. 3,) is mounted upon the rod r' and brought to bear upon or rest against the guide-sleeve e' when the tripping-frame A′ swings forward under the action of gravity or by its own weight.

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawings.

If an object or body is struck by a car when in motion, the swinging frame A′ is pushed inwardly, as indicated by the curved dotted line in Fig. 3, against the clamping-sleeve e, thereby pulling the rod r', the crank-lever D′ of the foot-power-releasing device, also the crank-lever D, attached to the hangers C, thus pulling it aside from the roller h', thereby releasing the fender-tray, which at once drops by its own weight to the ground or track, and is forced in contact therewith by the flat springs E and so held by the pawl P, which engages with the ratchet l on the arm H.

By releasing the pawl the tray or guard can be lifted till the crank-lever D swings into position again, which operation is rendered automatic by reason of a bell-spring S, attached to the hanger and connecting with the rod r, as shown in Fig. 2. The tray or guard can also be made to drop by pressing with the foot upon the detachable foot-pin L of the foot-power-releasing device, and the operation of either of these devices is independent of the other, as is clearly shown, and, as will be readily understood, during heavy snow storms or on similar occasions, the tripping-frame A′ may be lowered and swung out of operative position under the car, and there held in any desired manner, at which time the device will be operated entirely by the foot-power mechanism.

My invention is not limited to the exact form, construction, and arrangement of parts herein shown and described, and I therefore reserve the right to make all such alterations therein and modifications thereof as fairly come within the scope of the invention.

Having fully described my invention, I claim and desire to secure by Letters Patent—

1. The combination with a car, of hangers secured to the bottom thereof, a rock-shaft mounted therein, a guard-tray connected with said shaft and projecting in front thereof, springs connected with the car and adapted to bear on said guard-tray and to depress the same in contact with the ground or track, operating devices connected with said hangers for holding the guard-tray above the ground or track and tripping mechanism connected with the platform of the car in front of said hangers and said guard-tray and also connected with said operating devices whereby the guard-tray may be depressed in contact with the ground or track, and tripping mechanism consisting of a crank-lever pivotally supported beneath the platform of the car, one arm of which supports a foot-bolt, which passes through the platform and other arm of which is pivotally connected with a rod, which passes backwardly over the guard-tray, and is connected with a crank-lever which is pivotally connected with one of said hangers and which operates in connection with an arm in connection with said rock-shaft substantially as described.

2. The combination with a car, of hangers secured to the bottom thereof, a rock-shaft mounted therein, a guard-tray connected with said rock-shaft and projecting in front thereof, springs connected with the car, and adapted to bear on said guard-tray, and to depress the same in contact with the ground or track, operating devices connected with said hangers, for holding the guard-tray above the ground or track, and tripping mechanism connected with the platform of the car in front of said hangers and said guard-tray, and also connected with said operating devices, whereby the guard-tray may be depressed in contact with the ground or track, and means connected with said operating devices for again lifting said guard-tray above the ground or track, said tripping mechanism consisting of a crank-lever pivotally supported beneath the platform of the car, one arm of which supports a foot-bolt, which passes through the platform, and the other arm of which is pivotally connected with a rod, which passes backwardly over the guard-tray, and is connected with a crank-lever which is pivotally connected with one of said hangers, and which operates in connection with an arm secured to said rock-shaft, said rock-shaft being provided with a ratchet, and said hangers with a spring-operated pawl which operates in connection therewith, substantially as shown and described.

3. The combination with a car, of hangers secured to the bottom thereof, a rock-shaft mounted therein, a guard-tray connected with said rock-shaft and projecting in front thereof, springs connected with the car, and adapted to bear on said guard-tray, and to depress the same in contact with the ground or track, operating devices connected with said hangers, for holding the guard-tray above the ground or track, and tripping mechanism connected with the platform of the car in front of said hangers and said guard-tray, and also connected with said operating devices, whereby the guard-tray may be depressed in contact with the ground or track, and means connected with said operating devices for again lifting said guard-tray above the ground or track, said tripping mechanism consisting of a crank-lever pivotally supported beneath the platform of the car, one arm of which supports a foot-bolt, which passes through the platform, and the other arm of which is pivotally connected with a rod, which passes backwardly over the guard-tray, and is connected with a crank-lever which is pivotally connected with one of said hangers, and which operates in connection with an arm secured to said rock-shaft, said rock-shaft being provided with a ratchet, and said hangers with a spring-operated pawl which operates in connection therewith, and said tripping mechanism being also provided with a swinging frame which is supported beneath the platform of the car, and which is pivotally connected with the rod which extends backwardly over the guard-tray, said swinging frame being adapted to come in contact with a person or object when struck, and to operate said tripping mechanism, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 14th day of November, 1895.

WILLIAM GRUNOW, JR.

Witnesses:

HENRY FANNING NORCROSS,

CHARLES KELSEY.