

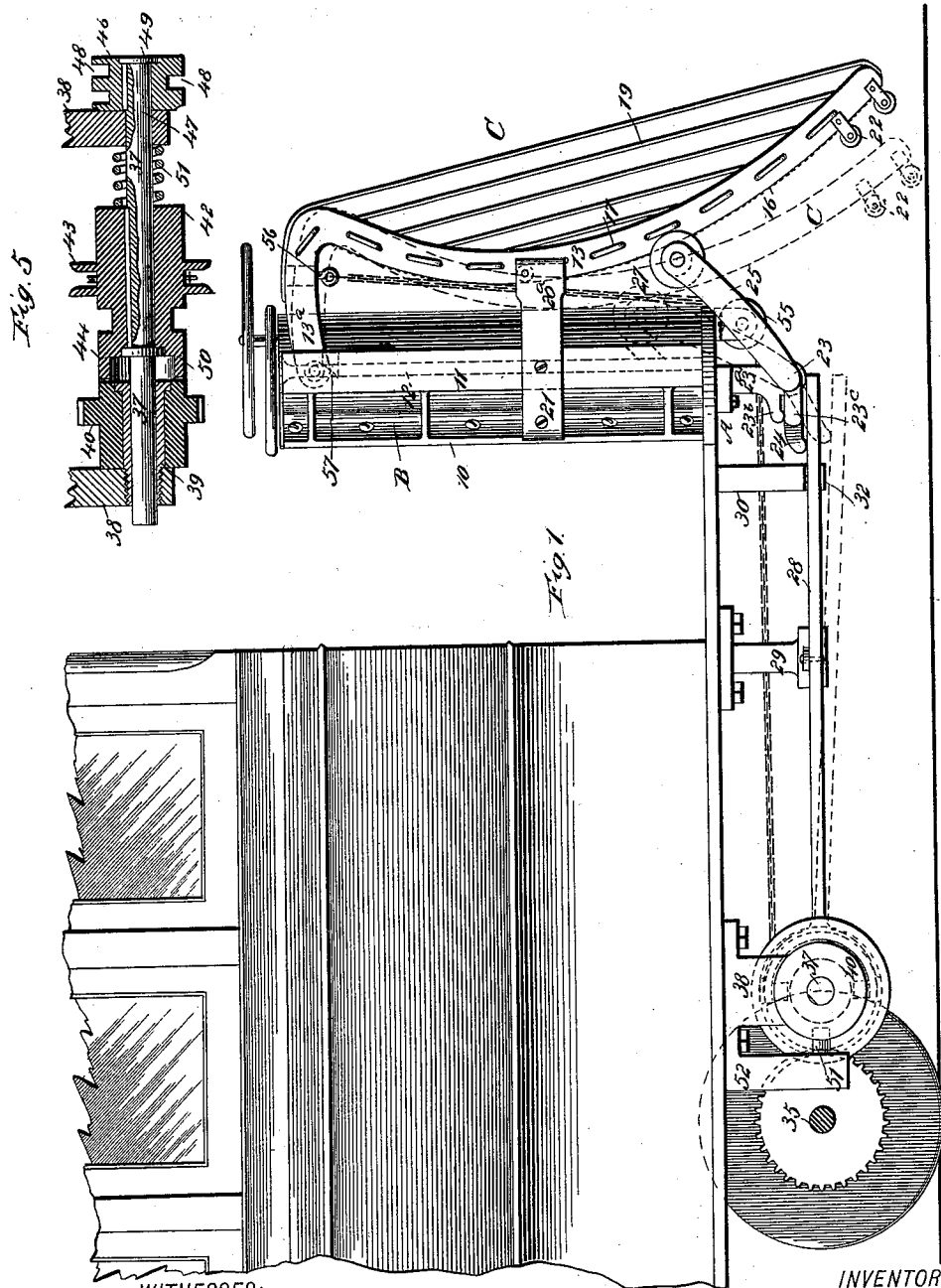
(No. Model.)

3 Sheets—Sheet 1.

W. T. DONOHUE.  
CAR FENDER.

No. 560,482.

Patented May 19, 1896.



WITNESSES:

*John A. Rennie*  
*J. H. Acker.*

INVENTOR

*W. T. Donohue*

BY

*Munn & Co.*

ATTORNEYS.

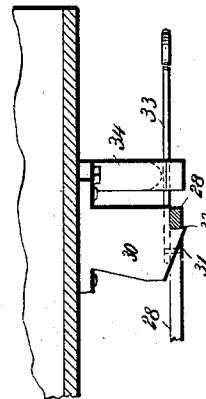
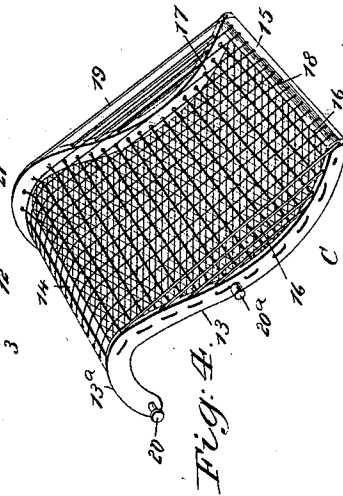
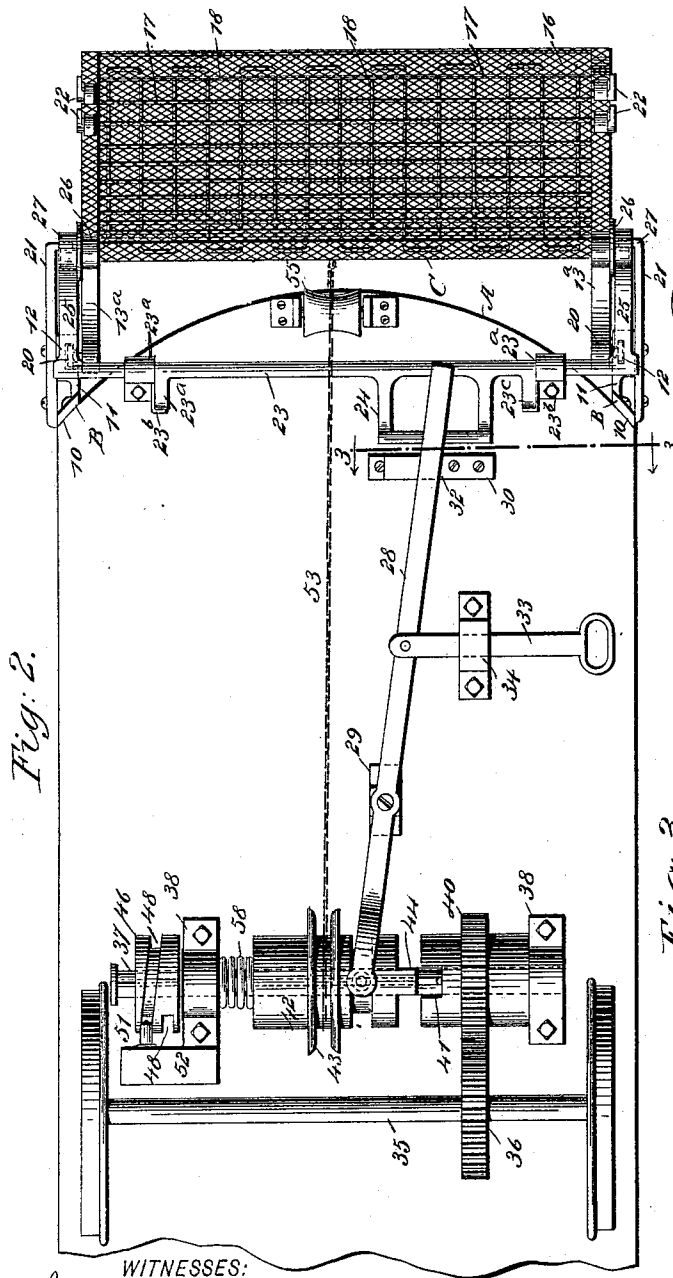
(No Model.)

3 Sheets—Sheet 2.

W. T. DONOHUE.  
CAR FENDER.

No. 560,482.

Patented May 19, 1896.



WITNESSES:  
*John A. Rennie.*  
*John A. Rennie.*

INVENTOR  
*W. T. Donohue*  
BY *Munn & Co.*  
ATTORNEYS.

(No Model.)

3 Sheets—Sheet 3.

W. T. DONOHUE.  
CAR FENDER.

No. 560,482.

Patented May 19, 1896.

Fig. 7.

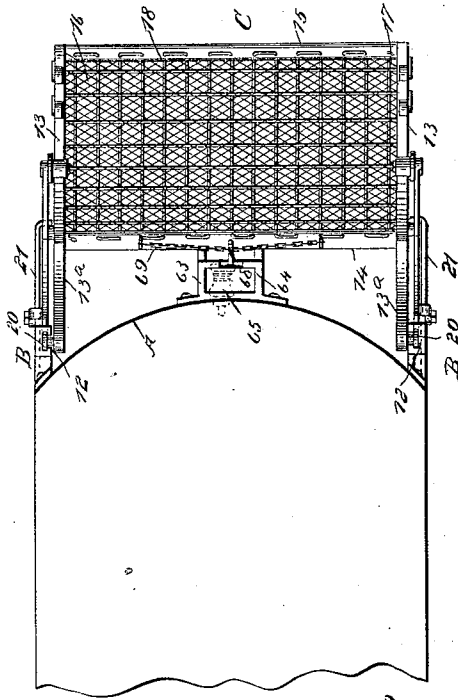
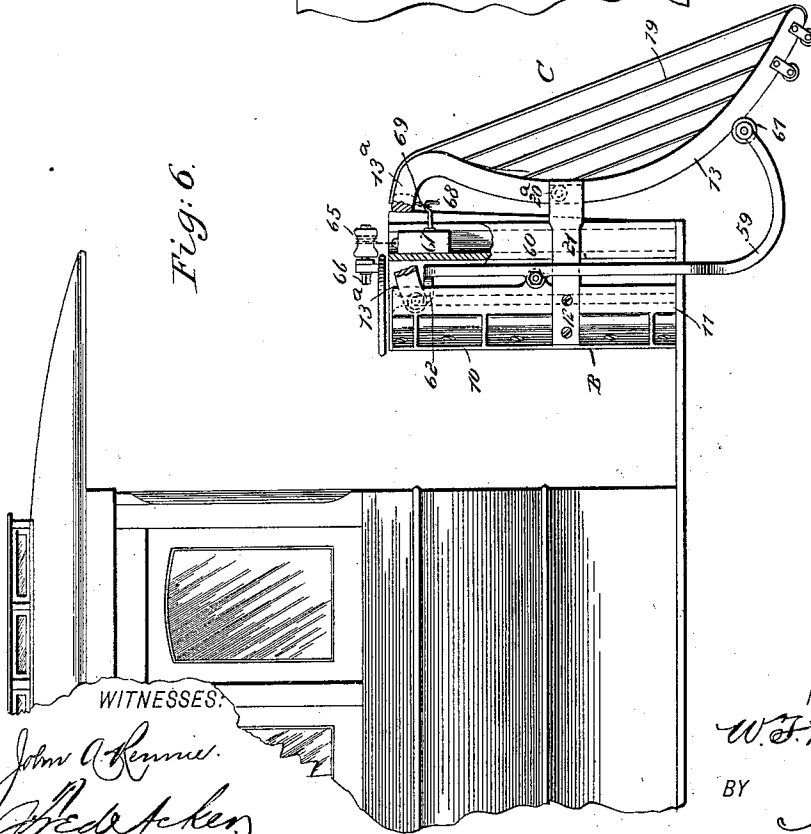


Fig. 6.



WITNESSES:

*John A. Rennie.*  
*Frederick A. Rennie.*

INVENTOR

*W. T. Donohue*

BY

*Munn & Co.*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

WILLIAM T. DONOHUE, OF NEW YORK, N. Y.

## CAR-FENDER.

SPECIFICATION forming part of Letters Patent No. 560,482, dated May 19, 1896.

Application filed June 6, 1895. Serial No. 551,887. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM T. DONOHUE, of New York city, in the county and State of New York, have invented a new and Improved Car-Fender, of which the following is a full, clear, and exact description.

My invention relates to an improvement in car-fenders; and the objects of the invention are to provide a fender so constructed that normally it will be carried in an upright position in front of the dashboard of the car, yet be close enough to the ground at its lower end to contact with an object falling in the path of the car, and to provide a means whereby the fender when it contacts with an object will be immediately placed in operative connection with the axle of the car or other driving-shaft and be instantly carried downward to an inclined position or a position which will convert it virtually into a cradle to receive said object, and to also provide a means whereby when the fender has been lowered sufficiently the driving connection between the driving-shaft and the fender will be severed, the driving mechanism being also automatically set in action by inward pressure on the fender, thus relieving the motorman or gripman from all responsibility in the manipulation of the fender and enabling him to devote all his time and attention to the brakes and driving mechanism of the car.

A further object of this invention is to construct the fender in such manner that it will present to the object falling thereon a soft yielding bed or a bed of a spring character, being double in its construction, so that in the event one stretch of material should be broken the object would be caught and sustained by the second or underlying stretch. The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the front portion of the car having the fender applied thereto and placed in its normal position. Fig. 2 is a bottom plan view of that portion of the car shown in Fig. 1 together with the fen-

der. Fig. 3 is a partial transverse section through the bottom of the car, the section being taken substantially on the line 3 3 of Fig. 2. Fig. 4 is a detail perspective view of the fender detached from the car. Fig. 5 is a longitudinal section through portions of the winding or drum shaft of the operating mechanism of the fender and likewise a vertical longitudinal section through the bearings and the mechanism carried by the shaft. Fig. 6 is a partial side elevation of a car and a modified form of the fender applied thereto, a portion of the fender and device for securing it to the car being shown in section; and Fig. 7 is a bottom plan view of the modified form of the fender.

In carrying out the invention an angular standard B is secured to the front end portion of the dashboard A of the car. Each standard comprises two members at angles to one another, the rear member being adapted for attachment directly to the dashboard, while the forward member extends in a forwardly direction from the said board, as shown in Figs. 1 and 2, and in the vertical member of each of the standards B a longitudinal groove 12 is made in the inner face, as indicated in the same figure.

The fender C is of peculiar construction, the frame consisting of side bars 13, which are concaved at their upper faces and provided with upwardly and rearwardly curved top extensions 13<sup>a</sup>, the side bars being connected at or near the top of their main portions by a cross-bar 14, and a similar bar 15 connects them at the bottom.

The back portion of the body of the fender is provided with a covering 16, preferably of wire-cloth or like material, and a double bed is formed on the frame by stretching cords or wires 17 from side bar to side bar and carrying longitudinal or vertical strands of similar material from one cross-bar to the other, or, instead of strands being employed, as illustrated in the construction of the double bed, each surface may be made of woven wire or its equivalent, and the space between the concaved faces of the side bars and the outer bed is filled in with strands 19 of woven material, as illustrated in Figs. 1 and 4.

At the rear end of each of the side-bar extensions 13 of the fender a pin 20 is secured,

and said pins are adapted to enter and slide in the grooves 12 in the standards B, whereby the fender will have movement in substantially a vertical direction in front of the dashboard, the extensions of the side bars serving to hold the body of the fender removed a predetermined distance from the said dashboard, and in order that the fender shall not move too far forwardly above the central portion of each side bar 13 a pin 20<sup>a</sup> is secured, which carries, preferably, a friction-roller, the said roller being adapted to travel against inwardly-bent arms from plates 21, secured to the outer faces of the standards, and at the bottom of the said fender one or more friction-rollers 22 are located at each side, adapted for engagement with the surface of the ground or with the tread of the rails when the fender is carried to receiving position, which position is at an angle to the dashboard, with the top of the fender at or near the central transverse portion.

A shaft 23 is journaled under the front portion of the car, transversely of the same, as shown in Fig. 2, being mounted to turn in bearings 23<sup>a</sup>, each bearing having an extension 23<sup>b</sup> to be engaged by stops 23<sup>c</sup>, projected rearwardly from the shaft, as is also shown in Fig. 1, and between the stops 23<sup>c</sup> of said shaft a frame or arm 24 is formed, and the shaft is further provided at each end with a crank-arm 25, adapted to normally extend forwardly and rearwardly in front of the dashboard, each crank-arm 25 being fitted with a friction-roller 26 and a flange or collar outside of the roller, and the rollers of the crank-arms are adapted for engagement with the back portion of the side bars 13 of the fender-frame at a point slightly below their centers, as shown in Fig. 1, the flanges 27 serving to guide the rollers on the said frame.

A shifting-lever 28 extends at its forward end under the arm 24 of the shaft 23. The arm 24 is adapted to trip the lever 28, and therefore may be denominated a "trip-arm," and the stops 23<sup>c</sup> on the shaft prevent the crank-arms 25 of the shaft dropping below their predetermined normal position. The shifting-lever 28 is fulcrumed upon a suitable pedestal 29, secured to the under portion of the car, and just back of the trip-arm 24 of the shaft 23 a post or stud 30 is secured to the bottom of the car, having a portion of its under surface inclined or beveled, as shown at 31 in Fig. 3, and also provided with a recess 32 at the lower end of the beveled surface, as illustrated in the same figure, and the shifting-lever is forced down the incline 31 of the post to enter the recess 32, which serves as a keeper, holding the said lever in a predetermined position until it is disengaged by the trip-arm 24 of the shaft 23. The shifting-lever may, however, be manipulated independently of the said trip-arm by means of a hand-lever 33, connected with the shifting-lever and leading outward convenient to one side of the car, be-

ing held to slide in a stirrup 34 or other guide, as shown in Figs. 2 and 3.

An axle 35 of the car is provided with an attached gear 36, and parallel with the said axle a shaft 37 is mounted in bearings 38, the said bearings being between the axle and the fender, and the shaft is so mounted that it is capable of free end movement as well as a rotary movement. A sleeve 39 is secured in one of the bearings in which one end of the shaft 37 revolves, and on this sleeve the hub of a gear 40 is loosely mounted, the said gear meshing with the gear 36 on the axle, and the inner end of the hub of this gear has a clutch-surface 41 made therein. Opposite the clutch end of the gear 40 a drum 42 is splined on the said shaft 37, and has flanges 43 produced upon its outer face, together with a clutch-surface 44, adapted to engage with the corresponding face on the gear 40, as shown in Figs. 2 and 5, and at the opposite end of the shaft a wheel 46 is splined thereon, provided with a peripheral spiral cam groove or race 48, and this end of the shaft is fitted with a head 49, the wheel 46 being preferably countersunk to receive the said head, while a collar 50 is mounted on the shaft, adapted to enter, preferably, a countersink in the clutch end of the drum 42. A pin provided with a friction-roller 51 is secured upon a bracket 52, projected downward from the bottom of the car, and the roller-bearing pin is made to enter, and, in fact, it does not leave, the cam groove or race 48 in the wheel 46. A chain 53, or its equivalent, is secured to the drum 42 between its flanges 43, and this chain is carried forward or to the end of the car over a suitable pulley 55 provided at that point, and from thence upward to an attachment to the central portion of the upper cross-bar of the fender C, as shown best in Fig. 1, the attachment being made through the medium of an eyebolt 56, and the fender is held in its upper position by means of latches 57, which are of a spring character and have beveled heads, the heads being made to extend transversely across the channels 12, in which the fender has sliding movement, and the latches are preferably secured to the standards B, as shown also in Fig. 1. The shifting-lever 28 is connected with the drum, the rear end of the lever being forked for that purpose, and a spring 58, located on the shaft 37, will be compressed when the drum is carried out of engagement with the gear 40, the spring being located between the drum and adjacent hanger 38.

In the operation of this fender normally the fender is in the position illustrated in Fig. 1, being held above the ground by means of the latches 57, and at that time the chain 53 will be almost entirely unwound from the drum 42. In the event the lower end of the fender comes in contact with an object on the track—as, for example, a child—the fender will yield in a rearward direction, carrying the crank-

arms 25 of the rock-shaft 23 to the inward position shown in dotted lines in Fig. 1, the fender assuming the rearward position shown in dotted lines in the same figure, and the rock-shaft 23 by this action of the arms 25 will be rotated to such an extent as to cause the trip-arm 24 attached to the shaft to press the shifting-lever 28 downward and releases it from its keeper 32, the shifting-lever being carried up the inclined surface 31 of the keeper-post 30 by the action of the spring 58, which will then be free to force the drum in clutch engagement with the gear 40, whereupon the drum will be revolved and will turn the shaft 37 also, and as the chain 53 is wound on the drum the fender will be drawn down to its receiving position, which will be at an acute angle to the dashboard of the car, and the object struck will be received by the fender and protected from injury.

When the drum has made about one revolution, which will be sufficient to draw the fender down to its receiving position, the pin 51, traveling in the cam-race of the wheel 46, will have carried the said wheel outward and will have entered the inner stretch of the said groove. Consequently the shaft 37 will have been carried outward also, removing the drum 42 from the influence of the clutch on the driving-gear 40, and the pulling strain will then be removed from the fender. When the fender is restored to its normal position—that is, carried upward—the chain will be unwound from the drum, causing the shaft 37 to revolve in a direction the reverse of that in which it was turned when driven from the axle, and consequently the cam-wheel will be restored to its normal position, or that shown in Fig. 1, the drum being prevented from slipping on the shaft while being revolved on the elevation of the fender because of the fact that as the drum was carried out of clutch engagement with the driving-gear the shifting-lever 28 was at the same time carried to an engagement with the said keeper. If desired, the fender can be run down at any time by manipulating the hand-lever 33.

I desire it to be understood that the clutch on the drum or sliding shaft may be driven by sprocket-wheels and chains instead of by gearing, as illustrated.

In the modified form of the fender the crank-arms 25 of the crank-shaft 23 are omitted, and in their stead levers 59 are located at each side of the dashboard, being pivoted to the standards B, as shown in Fig. 6 at 60, and the said levers are forwardly and outwardly curved at their lower ends, being provided at their lower extremities with friction-rollers 61, which engage with the rear portion of the side bars of the fender C, and at the upper end of each of the said levers a latch-head 62 is produced, which is substituted for the latch 57, (shown in Fig. 1,) and the said latch-heads are made to extend within the slideways 12 of the standards, serving to support the fender in its upper position.

At or near the central portion of the dashboard A of the car a box-like structure 63 is secured, being vertically placed and provided with an interior chamber 64, extending through from top to bottom, and upon the dashboard, or a convenient support, a pulley 65 or a drum is mounted to revolve, being placed immediately over the chamber 64 of the boxing 63, the said drum or pulley being secured upon a shaft 66, which is squared or otherwise formed at one of its ends to receive a crank or its equivalent, and a weight 67, which is contained within the chamber 64 of the boxing 63, is secured to this drum or pulley by means of a chain or cable, as illustrated in the said Fig. 6. The boxing is provided with a vertical groove in its forward face, extending through, practically, from top to bottom, and a hook 68, attached to the weight 67, extends through this groove in a forwardly direction, being connected with a chain 69, cable, or the like, secured to the upper central portion of the fender C, just below the upper cross-bar thereof.

In the operation of this form of the fender, providing the fender is struck by an obstacle in its path, it will be pushed rearward, and consequently the levers 59 will be rocked on their fulcrums so as to carry their latch-heads 62 from engagement with the extensions 13<sup>a</sup> of the fender, and the fender being thus released from its supports the weight 67 will act to carry the fender down to its receiving position. Thus it will be observed that under this construction all of the mechanism heretofore described and located beneath the car-body for the control of the fender is dispensed with.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A fender for cars, having sliding and guided movement on a portion of the car, levers fulcrumed upon the car structure, normally serving to support the fender in an upper position, and means, substantially as shown and described, for moving the said levers from supporting position in relation to the fender upon the rearward movement of said fender, as and for the purpose specified.

2. The combination, with a car, and guideways secured to the forward portion thereof at its sides, and a fender having a rearward extension, which extension has movement in the said slideways, of levers fulcrumed upon the forward portion of the car, latches normally supporting the fender in an upper position and controlled by the said levers, and a releasing device connected with the fender, operating to lower the same and brought into action at the rearward movement of the said levers, which movement releases the support of said levers, as and for the purpose specified.

3. A fender comprising guides at opposite sides of the car, a fender having side bars connected together and bent rearwardly at

their upper ends and provided with outwardly-projecting lugs at their extremities adapted for pivotal and vertical movement in the guides, and means for holding said fender in a raised position, said means having engagement with the bent ends of the fender side bars, and being actuated by the rearward movement of the lower end of the fender on contact with an obstruction, to release the fender and permit the same to fall into engagement with the track, substantially as set forth.

4. A car-fender comprising guides at opposite sides of the car, a fender having its upper portion mounted pivotally and slidably in said guides, a pivoted lever having means to engage the upper end of the fender and hold the same normally against sliding movement, said lever being arranged to be actuated by the rearward movement of the lower part of the fender on contact with an obstruction,

to release said fender and permit the same to fall into engagement with the track, substantially as set forth.

5. A car-fender comprising guides at opposite sides of the car, a fender having its upper portion mounted pivotally and slidably in said guides, and a pivoted lever having its upper end adapted for engagement with the fender to hold the same normally in a raised position, and having its lower end arranged in position to be engaged and moved by the fender when the same is moved rearward on contact with an obstruction to release the fender and permit the same to drop into engagement with the track, substantially as set forth.

WILLIAM T. DONOHUE.

Witnesses:

PATK. V. BRADY,  
JOHN F. HANLON.