

(No Model.)

3 Sheets—Sheet 1.

T. C. HAMMOND.
CAR FENDER.

No. 557,201.

Patented Mar. 31, 1896.

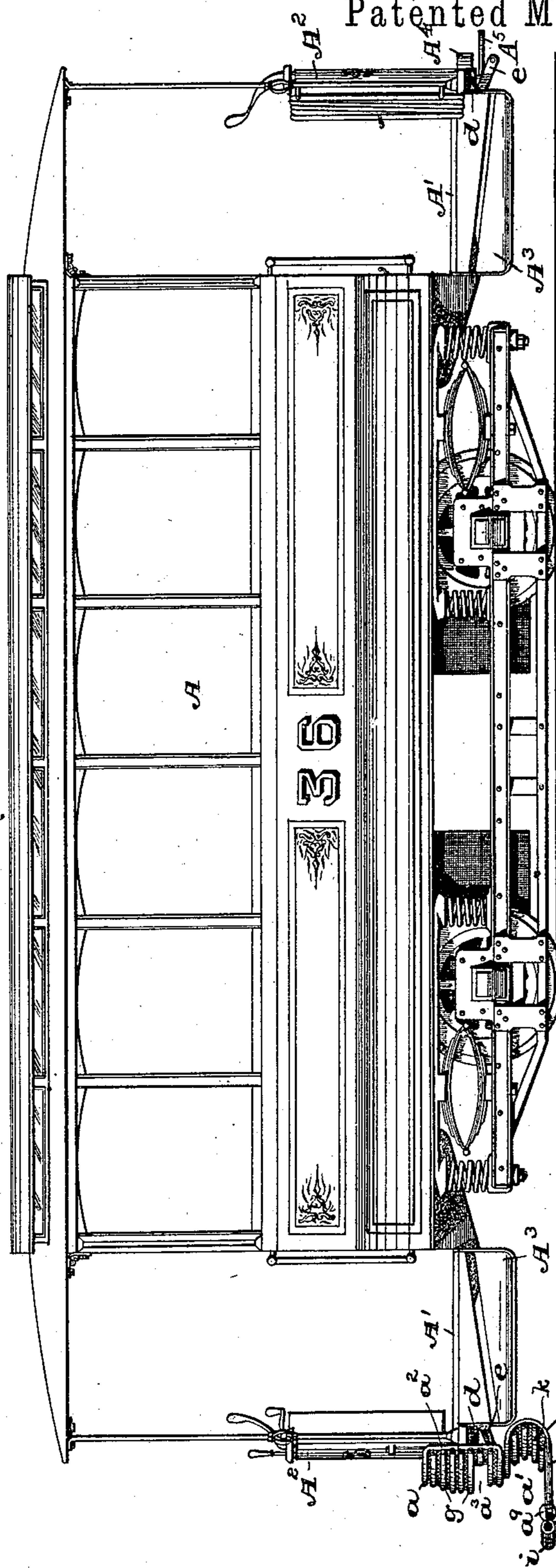


Fig. 1

WITNESSES:

B. Mortimer Grisdell.

Wm. H. Canfield, Jr.

INVENTOR:

THEODORE C. HAMMOND.

BY *Fred C. Fraentzel*, ATT'Y.

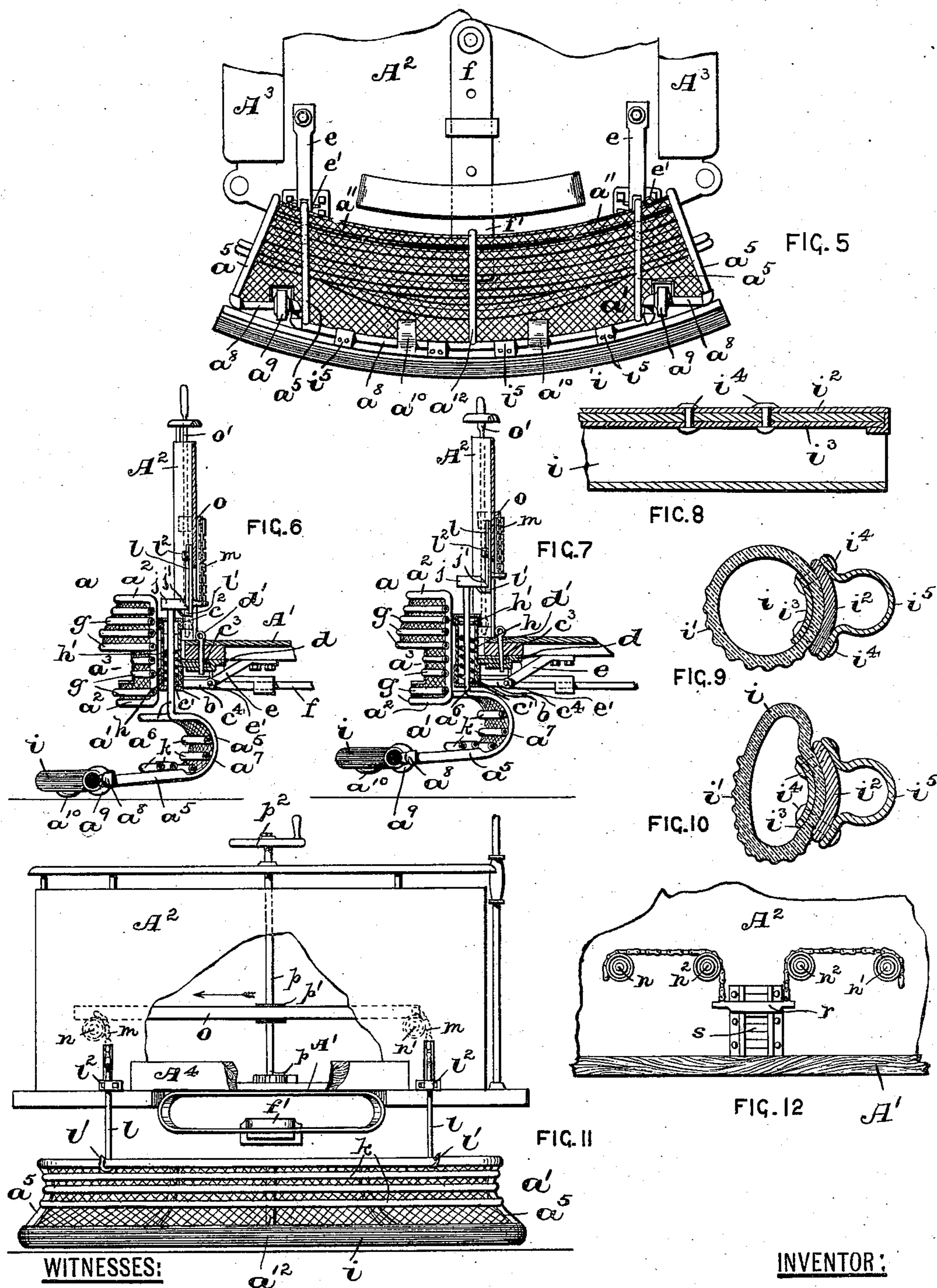
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3 Sheets—Sheet 3.

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WITNESSES:

Wm. H. Canfield, Jr.
B. Mortimer Russell.

INVENTOR:

THEODORE C. HAMMOND.

BY Fred C. Fraentzel, ATT'Y.

UNITED STATES PATENT OFFICE.

THEODORE C. HAMMOND, OF NEWARK, NEW JERSEY.

CAR-FENDER.

SPECIFICATION forming part of Letters Patent No. 557,201, dated March 31, 1896.

Application filed October 3, 1894. Serial No. 524,788. (No model.)

To all whom it may concern:

Be it known that I, THEODORE C. HAMMOND, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Car-Fenders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention has reference to improvements in fenders or life-saving guards for railway-cars, such as electric, cable, or other surface cars; and the invention has for its principal object to provide a convenient, adjustable, and perfectly-operating device of this class which is intended and is especially adapted for the protection of human beings from loss of life or serious injury.

The invention consists in the novel form of fender and in the arrangement and combinations of the several devices and parts, as will be hereinafter fully described, and finally set forth in the clauses of the claim.

The invention is illustrated in the accompanying sheets of drawings, in which similar letters of reference are employed to indicate corresponding parts in all the figures.

In said drawings, Figure 1 is a side view of a car provided with a fender embodying the principles of my invention, comprising therein an upper and stationary fender frame or guard and a lower and vertically movable or adjustable fender-frame. Fig. 2 is a front view of the fender, illustrating said stationary and said movable parts in their normal positions. Fig. 3 is a similar view of the fender, with the lower fender-frame in its raised position. Fig. 4 is a top or plan view of the fender and part of the platform of a car. Fig. 5 is a bottom view of said fender and platform, illustrating in connection therewith an adjustable draw-bar. Fig. 6 is a side view of the parts illustrated in Fig. 2, with certain parts of the device represented in section; and Fig. 7 is a similar view of the parts illustrated in Fig. 3. Fig. 8 is a horizontal section of a flexible cushion or contact-tube which may

be attached to the fender. Fig. 9 is a vertical cross-section of said cushion or contact-tube in its normal condition; and Fig. 10 is a similar view of said tube, showing the same flattened out by coming in contact with an object on the track. Fig. 11 is a front view of the lower fender-frame and means for raising and lowering the same, said means being of a modified form of construction. Fig. 12 is a front view of a device operated by foot-pressure for raising and lowering the lower fender-frame.

In said drawings, A represents the body of a car; A', the platforms; A², the dashboards, and A³ the steps.

The bumpers of the car are indicated by the letter A⁴, and A⁵ is the coupling or draw-rod.

My improved fender is preferably arranged in front and partly underneath the platform of the car, as will be seen more especially from an inspection of Figs. 1, 6, and 7, and comprises therein a stationary or fixed upper guard or fender frame, as *a*, and a lower and movable or adjustably - arranged fender-frame, as *a'*, provided with adjusting devices operated from the platform of the car. Connected with said upper fender frame or guard *a* are two or more suitable cylinders or tubes *b*, which are placed at convenient points on the front of the platform of the car. Said cylinders or tubes *b* may be provided with suitable fittings *c*, *c'*, and *c''*, substantially as illustrated in Figs. 2 and 3. Each fitting *c* is provided with a suitable stem *c''*, which slides into and fits in a socket *d*, (see Figs. 5, 6, and 7,) bolted preferably to the bottom of the platform; but said sockets *d* may be secured on top of the platform, as may be desired, which is determined by the height of the platform and the distance the movable part *a'* of the fender is intended to be lifted. Said stems *c''* of each fitting *c* are held in place in their respective sockets *d*, preferably by steel pins *d'*, dropped from the top of the platform into perforations in these several parts, as shown. Each fitting *c'* at the lower end of each tube or cylinder *b* is also provided with a stem or extension *c''*, which can be passed into a recess or slot formed in the free end of a stay-bar *e*, to which it is pivotally secured by means of a pin *e'* or in any other well-

known manner. Said stay-bars, of which there is one to each cylinder, are placed underneath the platform and are secured to the bottom of the platform in any suitable manner, as will be evident from Figs. 6 and 7. As will be understood, said stems c^3 and c^4 of the fittings c and c' , respectively, may be short or long, as may be necessary to adjust the upper fender-frame to the clearance of the bumper or the coupling-bar of the car.

The upper fender frame or guard a is rigidly connected with said cylinders or tubes b in any well-known manner, thereby forming a fixed or stationary guard in front of the bumper, the coupling-bar, and the dashboard of the car. Said upper fender-frame a , as will be clearly seen from the several figures of the drawings, comprises therein the frame a^2 , covered with wire-netting or other suitable material, the frame being curved to conform with the curvature of the front end of the car and covering the bumper, so as to fully protect a person struck by the car from coming in contact with said bumper. The netting of the said upper fender or guard a may be provided with a centrally-arranged opening a^3 , through which the forward end f' of an extensible coupling-bar f can be made to project when it is desired to couple two cars, as will be clearly understood from an inspection of Figs. 5, 6, and 7.

The wire-netting may be provided with a series of rubber tubes g , such as ordinary rubber hose or other suitable padding, to protect the face and hands from injury when a person is thrown upon the fender. In order to sufficiently stay said cylinders or tubes b , a rod a^4 is used as a connection between the cylinders, as will be seen from Fig. 4.

The lower and vertically-moving fender a' consists, essentially, of elliptically-curved arms a^5 , the upper ends of which terminate in ascending vertical stems a^6 , which extend into and through the cylinders b , in which said stems are free to move upward or downward, as desired. The elliptical parts of said arms extend backward from said vertical parts toward the rear of the platform and by their shape provide a crib or cage adapted to receive and safely retain any person or object struck by the car, while the lower parts of said arms extend forward to a line in advance of said platform and near the surface of the road-bed, as seen in Figs. 1 and 6, and are thereby caused to pick up the person or object struck. Within each of said cylinders b and encircling said posts or vertical parts a^6 of the arms a^5 are coiled springs h of suitable strength. The lower ends of said springs may be attached to the bottom of the cylinders, while the upper end of each spring normally rests against a suitable stop or pin h' in the parts a^6 at such a point on said vertical part as may be determined by the distance the arms a^5 of the movable fender-frame a' are intended to be raised. The functions of these springs h are to cause the fender-frame a' to return

to its normal position (indicated in Fig. 6) after said frame has been raised to the position indicated in Fig. 7 and subsequently released by the motorman, thereby forcing said part of the fender downward to its proper position near the track and holding it in said position. These springs also perform another function—namely, in case of the rocking or seesaw motion of a car in passing over poorly-laid rails the lowest part of the fender-frame a' in coming in contact with the surface of the road-bed will readily adjust itself to any unevenness by means of the reciprocatory motion of the vertical parts a^6 in their respective cylinders b .

The arms a^5 of the frame a' , of which there may be two, three, or more, only two of which need be provided with springs h , are preferably made of spring-steel or other suitable material and curved to the desired shape, as clearly illustrated in Figs. 1, 6, and 7, the curved portions of said arms being preferably flattened, as at a^7 , to give sufficient spring action to the lower fender-frame and enable it to move slightly backward when coming in contact with an obstruction on the track. This tends to break the force of contact and by said spring action of the arms a^5 to slightly lower the front end of the frame, thereby immediately scooping or picking up the obstructing object. As will be seen from Figs. 4 and 5, the said arms a^5 are connected at their lowest points with a front cross-bar a^8 , made of suitable metallic tubing and provided with jam-wheels a^9 and jam shoes or runners a^{10} , which may be arranged as indicated in Fig. 5, but said wheels being placed, preferably, directly over the tread of each track or rail. Any suitable number of such wheels a^9 and jam-shoes a^{10} may be used, said shoes serving the following purposes: first, to facilitate and provide for the free and unobstructed movement of the fender-frame a' over the tracks or road-bed in either the forward or backward movement of the car; secondly, to prevent in a measure the abrasion of the cushion or contact-tube i , secured to said cross-bar a^8 by friction on the pavement; thirdly, to aid the natural spring of the curved arms of the fender, thereby readily permitting its automatic adjustment to the rocking or jolting motion of the car; fourthly and mainly, in cooperation with the spring action of the arms a^5 to provide a complete and safe contact between said shoes and the surface of the road-bed whenever an object is struck by the fender, and thereby render it impossible for a person struck to pass beneath said fender. Furthermore, as has been stated, the arms a^5 may be curved substantially as shown, extending back under the platform of the car and then turned downwardly and outwardly, gradually approaching the track near the front, at which point the cross-bar a^8 and its cushion i are normally held in a position from two to four inches above the track, or even lower, if desired, except, of course, when the

fender-frame a' has been raised by the motorman.

I do not wish to be understood as limiting myself to any particular size or proportion of the arms a^5 , for they may be curved back farther under the platform and have less projection in front of said platform, or they may be but slightly curved backward and have a greater projection in front; but I prefer that the recession of said arms shall be about one-half of their projection in front of their vertical parts. As has been stated, said cross-bar a^8 of the lower fender-frame a' is provided with a flexible cushion or contact-tube i , which may consist of any woven fabric or other flexible material, but is preferably a piece of rubber tubing, provided in part with the ribbed surface i' , substantially as shown in Fig. 9. It is of sufficient weight and strength to protect the person struck from serious injury or bruises by the cross-bar a^8 or the parts back of said bar, the said rubber tube i yielding to pressure and when struck assuming the shape illustrated in Fig. 10, the upper surface or portion of the tube extending backwardly, thereby giving to the object struck a backward movement, being, as it were, the initial movement to a backward roll, and thus materially aiding the apparatus to perform its proper function and "pick up" that which is desired.

In Figs. 8 and 9 I have illustrated one manner of securing the cushion or tube i to the rod a^8 , segmental sheets of metal i^2 and i^3 being arranged one within and one without the tube i and the parts being secured together by suitable rivets i^4 , as shown. Loops or fastening devices i^5 are used to connect these parts with the cross bar or rod a^8 of the fender-frame a' . The said curved arms a^5 may be connected at a suitable point, as at the beginning of the curved portions of said arms, with a rear bar a^{11} , said parts being secured with screw-fittings, or they may be strapped and bolted or otherwise secured together.

The two ends or side arms of the lower fender-frame a' , as will be seen from Figs. 4 and 5, extend outwardly to the width of the car-body, meeting the front cross-bar a^8 at or near the jam-wheels a^9 . This lower fender-frame a' is covered with a suitable netting of wire, willow, rope, perforated rubber, or any other material sufficiently strong and of a close texture to form and complete the lower guard or shelf to my novel form of fender. A series of rubber tubes k , as ordinary rubber hose or padded cloth, may be used as a protection to the face and hands of a person caught in the fender. In order to raise said lower fender-frame, the vertical parts a^6 of the curved arms extend entirely through said cylinder b and are provided with cap-fittings j , supplied with a projecting hook j' on the side next to the dashboard of the car. Said hook-shaped ends j' , as will be seen from Figs. 6 and 7, project back and over similarly-shaped hooks l' on the vertical sliding bars l , placed

either on the outer or the inner side of the dashboard. Said bars l move in the guides l^2 and are connected with suitable chains m , running over pulleys n and n' , and are connected with a horizontally-sliding bar o , which is preferably operated by means of a pivoted lever o' . The movement of said lever either to the right or left will lift or lower the movable part of the fender, as required and as shown in Fig. 7, being held in its raised position by the contact of said lever o' with one of the ratchet-teeth o^2 , secured to the dashboard. In lieu of this form of construction for raising and lowering said lower fender-frame a' , I may use the construction illustrated in Fig. 11. In this construction the lower ends of the two sliding bars l are simply hooked over the upper bar of the lower fender-frame a' , and the horizontal sliding bar o is provided with ratchet-teeth engaging with a gear-wheel p' on a rotary and vertically-arranged rod p , operated by a suitable handle or wheel p^2 from the platform of the car. By turning said rod the fender-frame a' can be raised and lowered, as will be understood.

In Fig. 12 I have illustrated still another modified form of construction of a device for raising and lowering the fender-frame a' . In this case the chains m pass over an extra set of pulleys n^2 , being connected with a foot-board r , adapted to engage with stops s , secured against the dashboard, as shown in said figure.

The manner of applying and operating the herein-described fender is as follows: As before stated, the sockets d and the stay-bars e are permanently secured to the two ends of the car-body and are independent of the parts comprising the upper and the lower fender-frames a and a' , respectively. These frames, being complete in themselves and being connected with each other, are secured to said sockets and said stay-bars in the manner previously described by the pins, holding the fender in its proper position above the tracks. While the car proceeds on its trip the fender will need no attention unless track repairs are in progress, when the motorman, by the manipulation of the mechanism described, raises the lower fender-frame a' to clear these obstructions. At turnouts or crossovers in streets where there is heavy traffic there is always more or less unevenness in the road-bed or in the tracks, and hence, the jolting motion of the bed being severe, the fender-frame a' can be readily raised at such point should it be necessary to prevent damage to the fender. When the car has reached the terminus of the route, the pins connecting the several fittings on the cylinders b with the sockets d and stay-bars e are removed, the fender withdrawn from that end of the car, transferred to the other end and quickly adjusted and secured in place, and the car is ready to proceed on its return trip.

Thus it will be seen that the fender is practical, simple in its application and operation, and is admirably adapted to the purposes for which it is intended.

5 Of course it will be understood that the special form of construction and the arrangements and combinations of the several parts herein shown are given only to illustrate one practical embodiment of my invention, and
10 hence I do not wish to be understood as limiting myself to the exact details of construction herein shown, as the same may be varied in practice without departing from the scope of my present invention. For instance, the
15 springs *h* contained in said vertical tubes or cylinders *b* and encircling the vertical parts *a*⁶ may be arranged to act directly opposite and for the reverse purpose—that is, to normally lift the movable part *a*¹ of the fender
20 to the desired elevation when released by the motorman. In this adaptation the upper ends of said springs are fastened to the tops of the cylinders *b*, and the lower ends of the springs are operatively connected with said
25 vertical parts *a*⁶, as will be clearly understood.

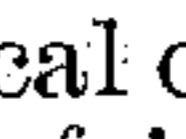
Having thus described my invention, what I claim is—

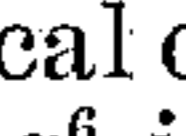
1. In a fender for cars, the combination, with an upper fender-frame and means rigidly
30 connected therewith for securing said frame in a fixed or stationary position in front of the dashboard of a car, of a lower and vertically moving or adjustable fender-frame, below said upper and fixed frame, and means con-
35 nected with said lower frame for raising and lowering said frame, whereby the upper part of said lower frame can be raised directly behind the lower part of the upper frame to produce a practically continuous frame, sub-
40 stantially as and for the purposes set forth.

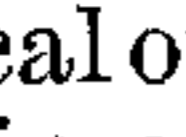
2. In a fender for cars, the combination, with an upper fender-frame and fittings for securing said frame in a fixed or stationary position in front of the dashboard of a car, said
45 fittings forming guides, of a lower fender-frame movable and vertically adjustable in said guides, and means connected with said lower frame for raising and lowering said frame, whereby the upper part of said lower
50 frame can be raised directly behind the lower part of the upper frame to produce a practically continuous frame, substantially as and for the purposes set forth.

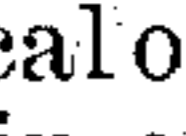
3. In a fender for cars, the combination, with an upper fender-frame, fittings for secur-
55 ing said frame in a fixed or stationary position in front of the dashboard of a car, and cylinders *b* secured in said fittings, of a lower and vertically moving or adjustable fender-frame below said upper and fixed frame, ver-
60 tical stems on said lower frame extending into and through said cylinders, springs encircling said stems, and means for raising and lowering said lower frame, whereby the upper part
65 of said lower frame can be raised directly behind the lower part of the upper frame to pro-

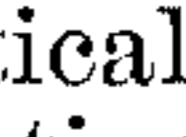
duce a practically continuous frame, substantially as and for the purposes set forth.

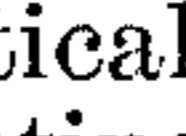
4. A fender-frame for cars, as *a*¹, comprising therein elliptical or -shaped arms, as *a*⁵,
70 and vertical parts *a*⁶, in combination, with cylinders *b*, springs in said cylinders encircling said parts *a*⁶, means for raising and lowering said fender-frame, and an upper stationary fender-frame, as *a*, connected with said cylin-
75 ders *b*, substantially as and for the purposes set forth.

5. A fender-frame for cars, as *a*¹, comprising therein elliptical or -shaped arms, as *a*⁵,
80 and vertical parts *a*⁶, in combination, with cylinders *b*, springs in said cylinders encircling said vertical parts, means for raising and lowering said fender-frame, a lower connecting-bar *a*⁸, and jam-shoes connected with said bar, and an upper stationary fender-frame, as *a*,
85 connected with said cylinders *b*, substantially as and for the purposes set forth.

6. A fender-frame for cars, as *a*¹, comprising therein elliptical or -shaped arms *a*⁵, and
90 vertical parts *a*⁶, in combination, with cylinders *b*, springs in said cylinders encircling said vertical parts, and fittings *c* and *c*¹ connected with said cylinders, each provided with a stem or projection, and sockets *d* and stay-bars *e* secured to the platform of a car, with
95 which said fittings are detachably connected, substantially as and for the purposes set forth.

7. A fender-frame for cars, as *a*¹, comprising therein elliptical or -shaped arms *a*⁵, and
100 vertical parts *a*⁶, in combination, with cylinders *b*, springs in said cylinders encircling said vertical parts, and fittings *c* and *c*¹ connected with said cylinders, each provided with a stem or projection, sockets *d* and stay-bars *e* secured to the platform of a car, with which
105 said fittings are detachably connected, and an upper fender-frame, as *a*, fixed to said cylinders *b*, substantially as and for the purposes set forth.

8. A fender-frame for cars, as *a*¹, comprising
110 therein elliptical or -shaped arms, as *a*⁵, a lower connecting-bar *a*⁸, a flexible tube or cushion, as *i*, connected with said bar *a*⁸, and vertical parts *a*⁶, in combination, with cylinders *b*, springs in said cylinders encir-
115 cing said parts *a*⁶, and means for raising and lowering said fender-frame, substantially as and for the purposes set forth.

9. A fender-frame for cars, as *a*¹, comprising
120 therein elliptical or -shaped arms, as *a*⁵, a lower connecting-bar *a*⁸, a flexible tube or cushion, as *i*, connected with said bar *a*⁸, and vertical parts *a*⁶, in combination, with cylinders *b*, springs in said cylinders encir-
125 cing said parts *a*⁶, means for raising and lowering said fender-frame, and an upper fender-frame, as *a*, connected with said cylinders, substantially as and for the purposes set forth.

10. In a fender for cars, a fender-frame,
130 having a lower bar, as *a*⁸, in combination, with a flexible tube or cushion *i*, having ribs

5 i' , and means for securing the same to said bar, consisting essentially, of sheets of metal, as i^2 and i^3 , rivets i^4 for securing said parts together, and devices i^5 for attaching the same to said bar a^8 , all arranged, substantially as and for the purposes set forth.

10 11. A fender-frame for cars, as a' , comprising therein elliptical or \mathbf{D} -shaped arms, as a^5 , a lower connecting-bar a^8 , and vertical parts a^6 , in combination, with cylinders b , springs in said cylinders encircling said vertical parts, caps j on the upper ends of said vertical parts a^6 , hook-shaped guide-rods connected with said caps, and means for operating said guide-rods from the platform of a car, substantially as and for the purposes set forth.

20 12. A fender-frame for cars, as a' , comprising therein elliptical or \mathbf{D} -shaped arms, as a^5 , a lower connecting-bar a^8 , and vertical parts a^6 , in combination, with cylinders b , springs in said cylinders encircling said vertical parts, caps j on the upper ends of said vertical parts a^6 , hook-shaped guide-rods connected with said caps, means for operating said guide-rods from the platform of a car, and an upper stationary fender-frame, as a , connected with said cylinders b , substantially as and for the purposes set forth.

30 13. The herein-described fender for cars, consisting of cylinders b having fittings provided with stems, sockets d and stay-bars e secured to the platform of a car, with which said stems are detachably connected, a lower and movable fender-frame, as a' , comprising therein elliptical or \mathbf{D} -shaped arms a^5 , vertical parts a^6 connected therewith, a lower

connecting-bar a^8 , jam-shoes and jam-wheels thereon, springs h in said cylinders encircling said vertical parts a^6 , a ribbed tube or cushion, as i , secured to said bar a^8 , and a fixed fender-frame, as a , connected with said cylinders, all arranged, substantially as and for the purposes set forth.

45 14. The herein-described fender for cars, consisting of cylinders b having fittings provided with stems, sockets d and stay-bars e secured to the platform of a car, with which said stems are detachably connected, a lower and movable fender-frame, as a' , comprising therein elliptical or \mathbf{D} -shaped arms a^5 , vertical parts a^6 connected therewith, a lower connecting-bar a^8 , jam-shoes and jam-wheels thereon, springs h in said cylinders, encircling said vertical parts a^6 , a ribbed tube or cushion, as i , secured to said bar a^8 , a fixed fender-frame, as a , connected with said cylinders, and means for raising and lowering said lower fender-frame, consisting essentially, of hook-shaped caps, as j , on the upper ends of said vertical parts a^6 , hook-shaped guide-bars l in engagement with said caps j , a sliding bar o and lever o' , and flexible connections between said bar o and said guide-bars l , all arranged, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 28th day of September, 1894.

THEODORE C. HAMMOND.

Witnesses:

FREDK. C. FRAENTZEL,
WM. H. CAMFIELD, Jr.