

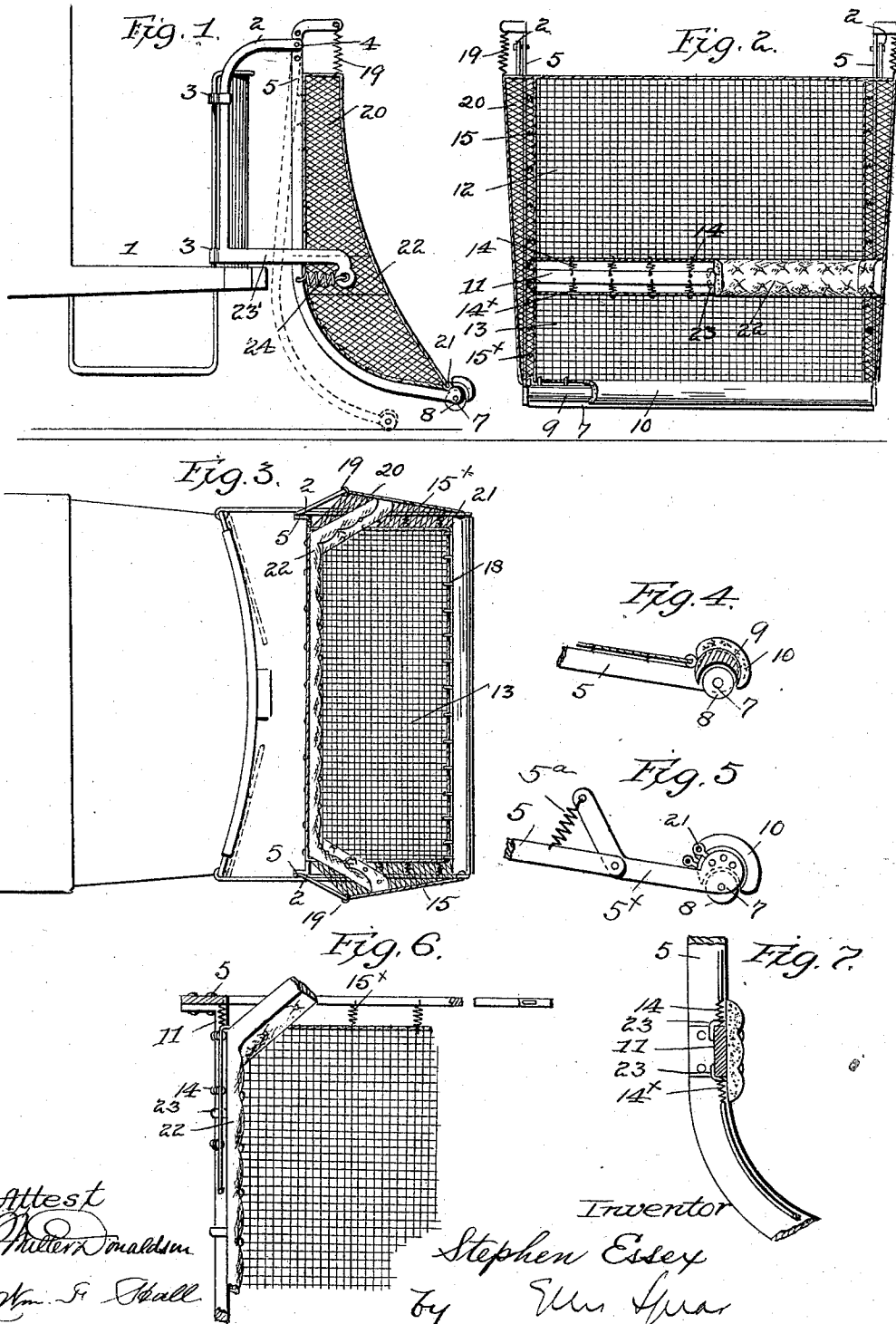
(No Model.)

2 Sheets—Sheet 1.

S. ESSEX.
FENDER FOR CARS.

No. 534,822.

Patented Feb. 26, 1895.



Attest
M. S. Small

Inventor
Stephen Essex
by E. S. Small
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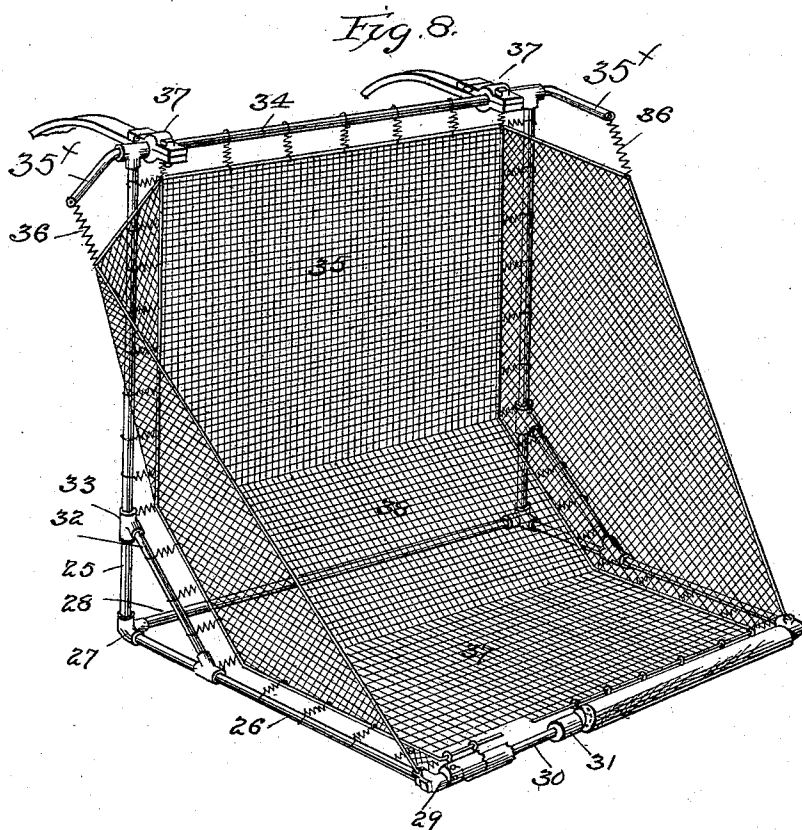
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2 Sheets—Sheet 2

S. ESSEX.
FENDER FOR CARS.

No. 534,822.

Patented Feb. 26, 1895.



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Inventor
Stephen Essex
by E. L. Sprar
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UNITED STATES PATENT OFFICE.

STEPHEN ESSEX, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO HIMSELF
AND ISAAC W. SAWIN, OF SAME PLACE.

FENDER FOR CARS.

SPECIFICATION forming part of Letters Patent No. 534,822, dated February 26, 1895.

Application filed July 7, 1894. Serial No. 516,847. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN ESSEX, a citizen of the United States of America, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Fenders for Cars, of which the following is a specification.

It is the object of my invention to provide a fender for street cars which may be readily attached to cars of existing forms and easily transferred from end to end if desired and of such a nature that the liability of injury to the person struck by the fender will be reduced to a minimum.

My invention includes a frame carrying netting and suspended at its upper end at a point above the height of a person on the track, said frame depending from said pivotal point and having a forwardly reaching portion adapted to contact with the person or other object at a slight distance above the ground so that he will be thrown from his feet into the netting and thus removed from the track without injury to him. The suspended frame has a pendulum like motion and being held in forward position by a spring is adapted to yield backward when the forwardly reaching portion strikes the person thus preventing any injury to the limbs and preventing the feet from being caught under the fender.

It is my purpose to get the greatest possible resilience in the fender and for this purpose I attach the netting to the frame by a series of springs and as above stated I place the whole frame under spring tension holding it in forward position and this general resilience added to the resilience of the springs holding the netting to the frame and to the stretching or yielding effect of the netting itself secures a maximum yielding action and prevents shock or injury to the person.

The features of construction and special advantages of the same will be pointed out hereinafter.

In the drawings:—Figure 1, is a side view of the fender attached to the platform of the car. Fig. 2, is a front view thereof partly broken away. Fig. 3, is a plan view. Figs. 4, 5, 6 and 7 are views of details, and Fig. 8 is a perspective view of a modification.

The platform of the car is shown at 1. On the side rails of the dash board at points 3 3, are pivotally hung the standards 2 2, there being one for each side of the car and these extend up and curve forward to the points 4 at which points the side bars 5 of the net frame are pivoted to the standards. These side bars depend vertically to the level of the platform and then curve forward to the points 7 at a slight distance above the ground, the extreme ends of the side bars being enlarged and having journaled therein, the roller 8. This roller is covered on its upper side by a shield 9 of wood held by pins or screws passing through the enlarged ends of the side bars 5. To this wooden shield a pad 10 is secured preferably leather covered and adapted to provide a yielding buffer for contact with the person or object on the track and prevent injury thereto. This pad and shield protects the person from contact with the hard roller as they form a complete shield therefor. These parts brace the forward ends of the arms and hold them in proper position relative to each other.

A brace bar 11 extends between the side bars at the level of the bumper on the platform said bar having bent ends fitting against the inner faces of the side bars and bolted or riveted thereto. The main netting consists of two rectangular portions 12, 13, located respectively above and below the brace bar 11. The upper portion extends vertically in the plane of the brace bar and side bar and is of such size that a space is left between the edges of the net and the inner side of the side bars and the upper edge of the brace bar, and this net is connected to the said bar by a series of springs those between the brace bar and the net being marked 14 and between the net and side bars 15. The lower net extends also between the side bars which curve forward and its upper edge is in the vertical plane of the brace bar to which it is connected by the springs 14^x and to the curves of the side bars by the springs 15^x. The lower rope of this netting at the edge thereof extends through a series of eyes 18, in the wooden shield.

The upper ends of the side bars are bent forwardly and outwardly being thus flared out or inclined to the general form of the

frame and to these ends springs 19 are attached which are connected to the extreme upper front corner of the side nets 20 the front edges of which extend down to eyes 21 in the enlarged front ends of the side bars 5 being attached thereto at points slightly outside of the lower corners of the lower net. These side nets connect with the side edges of the upper and lower nets and thus they incline inwardly and backwardly to said main nets, and in front of the side bars. In order to protect the cross brace I have provided a pad 22 secured thereto by clasps 23 or strings, so that said pad shall not interfere with or 15 impede free action of springs and netting, said pad having angular end pieces which extend forward and inclined outwardly along the inside of the flaring side nets. This pad is sufficiently wide to cover the cross bar and 20 to extend over the springs connecting the same to the netting.

The lower parts of the hinged standards 2, 2, are formed with forwardly extending arms 23', the forward ends being bent down 25 into the plane of the platform and provided with an eye between which on the side bars of the net frame springs 24 extend tending constantly to pull the frame, into its forward position, but allowing it to swing back 30 when a person or object on the track is struck. These forwardly extending arms and the springs 24 are back of and outside the inclined side nets and the person is prevented from coming in contact with these points by 35 the said side nets and also by the angular extensions of the pad which are in the horizontal plane of the said arms and springs. The movement of the frame to the rear is limited by the resistance of the side springs and the 40 front roller is provided in order to pass over any small obstruction on the ground, to connect the side bars and to prevent the pad coming against the ground in case the frame is swung clear back.

The netting of the fender is sufficiently high 45 to reach above the height of a person on the track, and as said netting together with the pad extends in front of all the frame parts there is no liability of the person becoming 50 injured by contact with the said parts.

In operation the person will be thrown off his feet by the soft buffer pad at the front lower end of the frame coming in contact with his legs and he will then be caught by the netting of the fender and held without injury. 55 At the moment of contact, the frame will swing back with a pendulum motion its forward end describing a long arc with the upper pivotal point as a center and this motion will cause the buffer and roller to move down and back at an angle so as to interpose the complete device between the whole person and the car. The forward motion of the car 60 will then take the person into the fender and against the yielding netting and the pad.

By pivoting the fender at the point shown

a large net surface is presented to receive the person without injury and the easy pendulum like motion is secured. This motion being controlled by the side springs 24 relieves the 70 shock of the impact and besides this the yielding of the net itself and of the springs provides a fender having the greatest degree of resilience. The side standards 2, 2, may be 75 folded against the dash board as shown in dotted lines, Fig. 3, when the fender is removed and the removal of the fender may be effected by simply removing the pivot pins and unhooking the springs 24 from the bars 23', and it may then be transferred to the other 80 end of the car, and as easily placed by simply swinging out the standards at this end and pivoting the side bars to the top thereof, the only other adjustment being the placing of the side springs. The standards when in 85 working position may be retained rigidly in place by a suitable hook or other catch device not shown.

In Fig. 8, I have shown a cheaper form of frame made of metal tubing. The sides 25 90 instead of having curved forward extensions have right angular extensions 26 connected thereto by couplings 27 which also serve to couple the rear lower cross or brace bar 28. The forward ends of these extensions 26 have 95 couplings 29 connected by the brace rod 30 on which is journaled the roller 31. The wooden shield is secured to the upper sides of the couplings and the leather covered pad is provided as in the form first described. Corner 100 braces 32 with couplings 33 are employed to make the frame rigid. The upper ends of the side bars are connected by a cross bar 34 extending through couplings on the side bars and having angular forward extensions 35^x 105 inclining outwardly. The main net is all in one in this form comprising a vertical portion 35, a horizontal part 37 and the intermediate inclined part 38 parallel with the inclined corner braces. The springs for connecting 110 the netting with the frame are used in this form, and the side nets are supported from the angular arms of the top cross bar by the springs 36 and are connected along their inner edges with the edges of the main net. The 115 forward edge of the main net is held by the eyes in the wooden shield. Pads on the sides may be used as in the former case. Every part of the frame in this instance is covered and protected by the netting or netting and 120 pads, said netting being held at a slight distance away from the parts of the frame to permit the yielding action without allowing contact between the person and the frame.

The frame is pivoted in the bearings 37 of 125 the standards and may be readily removed therefrom.

The standards and the side spring arms restrict the lateral motion of the fender, but allow a longitudinal and a vertical motion, the 130 side bars serving as guides in these movements.

The frame can be adjusted vertically to adapt it to change conditions of the road bed whether by snow or otherwise.

The modification Fig. 5, is a supplemental spring action adapted to give a more prompt drop or yielding action to the buffer upon impact with the person. This consists of the angle lever 5^x carrying the shield roller and pad pivoted to the forward extension 5 of the frame and held in position by the spring 5^a between its end and the extension 5.

I claim—

1. In combination, the standards, the frame, pivoted thereto and having the side bars with the outwardly inclined upper ends, the main netting between the side bars, the spring connecting the main netting with the said bars, the inclined side nets connected at their upper end by springs with the inclined ends of the side bars and at their lower ends with the forward extension of the frame, the intermediate rear edges of said nets being connected with the edges of the main net, substantially as described.

2. In combination, the standards, the frame pivoted thereto at the upper end and depending therefrom, the side arms extending from the car platform forward of the main part of the frame, the springs between the forward ends of the said arms and the pivoted frame, the netting carried between the said bars of

the frame and the inclined side nets extending from the edges of the main frame outward and forward over the side bars, the side springs and the arms supporting the same, substantially as described.

3. In combination, the standards comprising the upper forwardly extending arms and the lower forwardly extending arms, the fender frame pivoted to the upper arms and the side springs connected to the lower arms and the fender frame, said standards with its arms being arranged to fold laterally of the car against the dash when the fender is removed, substantially as described.

4. In combination the standards having the upper and lower forwardly extending arms, the fender frame pivoted in the upper extensions forward of the dash and the springs connected to the lower forward extensions and extending rearwardly to the netting frame said spring being arranged to pull the frame forward into normal position and to allow the same to yield backwardly, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

STEPHEN ESSEX.

Witnesses:

HENRY E. COOPER,
WALTER DONALDSON.