(No Model.)

# E. J. SMITH.

## CAR FENDER.

No. 523,551. Patented July 24, 1894.

Fig. 1.

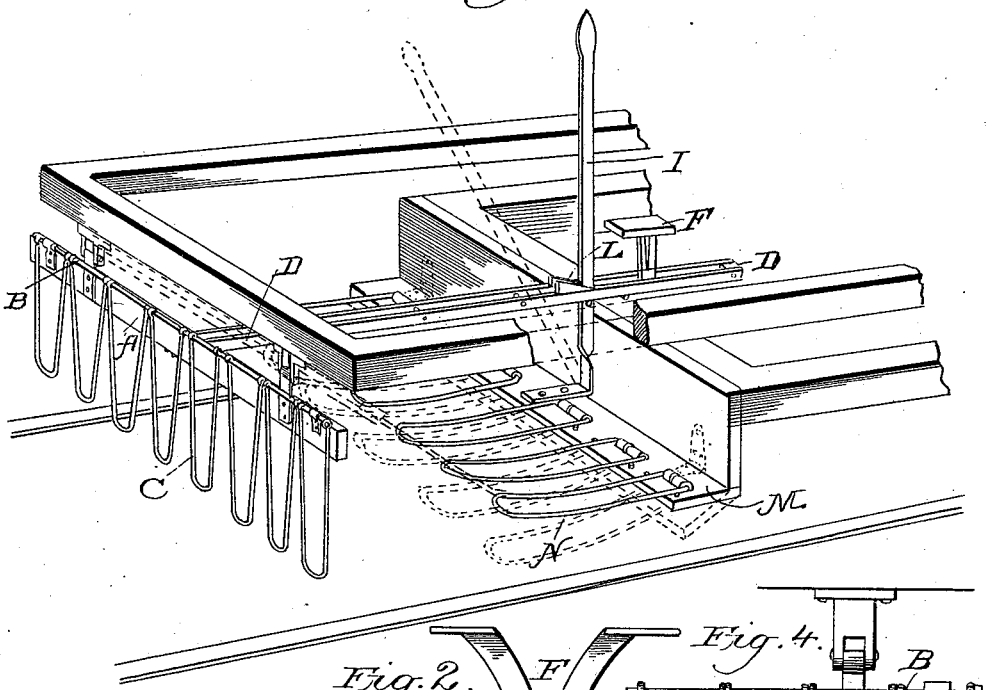



Fig. 2.

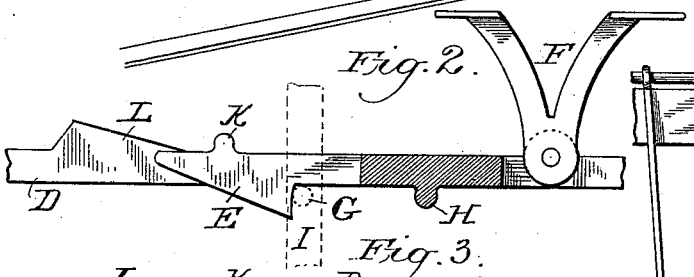



Fig. 3.

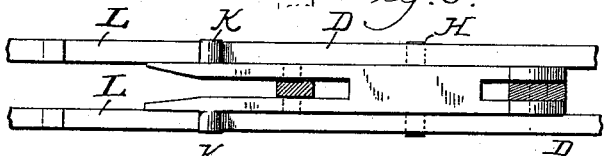



Fig. 4.

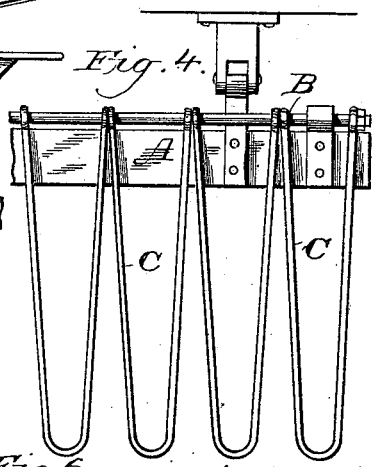



Fig. 5.

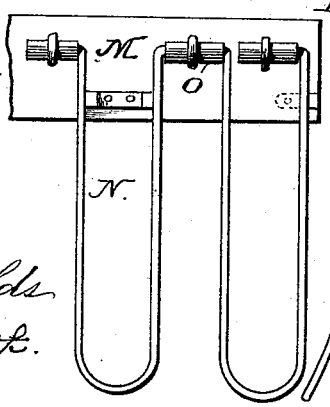



Fig. 6.

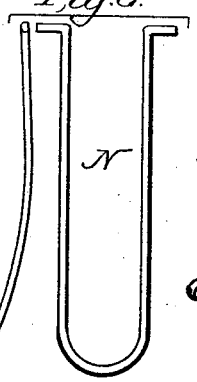
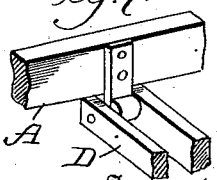



Fig. 7.

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# UNITED STATES PATENT OFFICE.

ELDRIDGE J. SMITH, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO THE AUTOMATIC CAR-FENDER COMPANY, OF SAME PLACE.

## CAR-FENDER.

SPECIFICATION forming part of Letters Patent No. 523,551, dated July 24, 1894.

Application filed April 27, 1894. Serial No. 509,256. (No model.)

*To all whom it may concern:*

Be it known that I, ELDRIDGE J. SMITH, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Fenders for Railway-Cars, of which the following is a full, clear, and exact specification.

This invention relates particularly to wheel fenders for cars, but is designed also to guard the low hanging or depending parts of the truck frames or car bodies, whereby persons are prevented from being injured by the wheels, or by low rigid parts of the car adjacent or contiguous to the wheels.

The numerous accidents and serious injuries resulting from rapidly moving street or surface cars encountering human beings on the track or road-way render it of the highest importance to provide railway cars with efficient and simple means which are perfectly reliable in emergencies for safely picking up a person if struck by a car or train and thrown on the track, in such position that some part of the body lies in the path of the car wheels, or in the path of some low hanging part of the truck frame or car body. It is also important that the fender mechanism be susceptible of practicable application to existing cars, or cars now in use, as well as to cars hereafter built, as otherwise some objection will likely be made to the general adoption of the device.

The object of my invention is to accomplish the results briefly alluded to, and to provide new and improved means for safely picking up a person or object lying on the surface or roadway traversed by the car or train.

The invention is designed for cars, or coaches, moved or propelled on surface tracks or roads by cable, electric, steam, or other motive power, but is susceptible of use on the cars of elevated railways.

The essential features of the invention reside in a vertically swinging pick-up fender, composed of a plurality of independently movable fingers extending forward from a suitable support and adapted to move in the arc of a circle to and from the surface traversed, in connection with finger-raising mechanism for simultaneously raising all the fingers, and trip devices for holding the finger-raising mechanism and maintaining the fingers in their raised position until an object is encountered which actuates the trip devices, whereupon the fingers swing downward in juxtaposition to the surface traversed and operate to safely pick up the person or object lying on the track.

The invention involves other features of construction and combination or arrangement of parts and principles of operation hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a detail perspective view of a portion of a railway car with my invention applied thereto. Fig. 2 is a detail longitudinal sectional view, showing portions of the trip devices. Fig. 3 is a top plan view of the same. Fig. 4 is a detail front elevation, showing some of the pendent guard fingers, and a portion of the support by which they are pivotally suspended from the car. Fig. 5 is a detail view, showing some of the fingers of the improved fender. Fig. 6 represents one of the fender fingers in plan and side elevation; and Fig. 7 is a detail view of a portion of the support for the pendent guard-fingers, showing also the forward end of the part which actuates the trip lever.

In order to enable those skilled in the art to make and use my invention I will now describe the same in detail, referring to the drawings, wherein I have illustrated in Fig. 1 a portion of the frame-work and end platform of a railway car.

I do not deem it necessary to illustrate or specifically describe the construction of the car, in that the invention is designed to be applied to a railway car of any construction, whether now in existence or to be hereafter built. It is desirable, however, to meet all the conditions required, to apply the improved fender to cars which more or less vary in construction, and the means for this purpose will hereinafter appear.

In the accompanying drawings, the letter A indicates a horizontal cross-bar, flexibly suspended from the car platform in any suitable

manner, but preferably by hinged connections, such as illustrated in Fig. 4, whereby the cross-bar is susceptible of swinging rearwardly with respect to the line of travel of the car.

The cross-bar is provided at its upper edge portion with a horizontal rod B, on which is strung a gang or series of pendent finger guards C, each composed, preferably, of a single piece of elastic wire bent centrally between the extremities into an approximately U-shaped form and having the extremities mounted upon or connected with the rod, the construction being such that the fingers normally stand vertical, or nearly so with their curved lower ends in proximity to the track or road-way.

The particular construction of the fingers and the manner of supporting the same may be widely varied without altering the spirit of my invention, so long as the parts constitute a pendent guard which serves to operate a trip mechanism hereinafter explained, for the purpose of automatically releasing my new and improved fender.

The fender proper is composed of a plurality of independently movable fingers N, each of which is made of a single piece of elastic wire, bent centrally between its extremities into approximately U-shape, and having the extremities, or ends, bent laterally, and pivotally engaged with eyes or sockets O, mounted on a transverse beam or support M hinged or flexibly connected with a part of the frame-work of the car, as will be clearly understood by reference to Fig. 1. The beam or support M is designed to normally stand approximately horizontal, as indicated by full lines, and to swing to the position indicated by dotted lines, Fig. 1, in order to swing the fender fingers N against, or near to, the surface traversed, so that the fingers will pass under and pick up a person or object.

I prefer to hinge the beam or support M to a sill, secured to the car frame, but obviously this beam or support can be otherwise supported or suspended, in such manner that it can swing in the manner above stated.

The elastic fender fingers are inherently elastic and are designed to work independent of one another, and they are curved longitudinally, as illustrated by the side elevation, Fig. 6. The independent movement of the elastic fender fingers is advantageous, in that, if an immovable or rigid obstruction be encountered, the only portion of the fender mechanism which will be affected by the shock will be the particular finger or fingers which meet the obstruction. Further, as the fingers are independently movable, they will individually more easily free themselves from the obstruction on the track. The independently movable fingers, also, more readily conform or adapt themselves to the surface traversed, and consequently they are more effective and efficient in picking up anything with which they come in contact. The independent mounting of the fingers, also, renders it possible to effect repairs, in that if one finger becomes injured, it can be quickly removed and another substituted therefor.

By constructing the fingers of elastic wire, in the manner described, if they meet an immovable or rigid obstruction, they tend to buckle up and free themselves from the object, which is advantageous.

When the beam or support of the fender fingers is free from restraint, it swings downward, as shown by the dotted lines, Fig. 1, to place the forward extremities of the fingers against, or near to, the surface traversed, as before explained, and therefore it is essential to provide suitable means whereby the fingers may be raised and maintained in an elevated position until occasion demands their being thrown into proper position to pick up a person or object on the track or road way. This result is accomplished in the present example through the medium of a lever I, secured at its lower end to the beam or support M, and extending vertically, so that its upper end can be located within convenient reach of the gripman, or motorman, or other attendant. The lever extends through the bifurcated or slotted portion of a lengthwise movable rod D, which is pivotally connected at its forward end with the cross-bar A from which the pendent finger guards C are suspended.

The rod D is preferably bifurcated, or slotted, in order to provide two side plates, each of which is constructed with an incline L, adapted to operate on laterally projecting lugs K of a trip-lever E having a hook to engage a pin G secured to or forming part of the lever I. The trip-lever is also provided with lugs H, designed to bear against the lower edges of the bar D. In practice the lugs K are mounted on the upper edge of the trip-lever, and the lugs H are arranged on the lower edge thereof. The trip-lever E is pivoted to a bracket F, designed to be secured to the floor or sill, or some other suitable stationary part of the car.

The construction of the parts described is such that when the lever I is moved rearward to raise the fender fingers to their elevated position, the pin G automatically engages the hooked portion of the trip-lever E, so that the fender fingers are maintained in their raised position until the trip-lever is disengaged from the pin G of the lever I.

The disengagement of the trip-lever is automatically effected by the rearward motion of the pendent finger-guard C which moves the rod D rearwardly and causes its incline L to act on the lugs K and lift the trip-lever E from engagement with the pin G, whereupon the fender fingers N will swing downward in the arc of a circle, and the lever I will swing forward to the position indicated by dotted lines, Fig. 1. When the pendent finger guards C are released by the object which they encounter, they swing forward to an approxi-

mately vertical position, and thus move the rod D forward to free the inclines L from their sustaining support of the lugs K, whereupon the trip-lever E will descend or drop into position to properly and automatically engage the pin G of the lever I, when the latter is swung rearward to the position indicated by full lines, Fig. 1.

The hook-shaped lever E, in connection with the lengthwise movable rod D and pendent fingers C, or other suitable devices for moving said rod lengthwise when an object is encountered, constitute trip-devices or trip mechanism for holding the lever and maintaining the fender fingers in their raised position until an object is encountered or struck.

The pendent finger guards which operate the trip devices or trip mechanism are preferably made of elastic wire about one-quarter of an inch in diameter, so that their tension will cause their adjacent or contiguous extremities to press against or toward one another, and thus preserve their proper position on the rod by which they are suspended. The finger-guards not only serve to operate the trip devices or trip mechanism, but when they are swung rearward or inward beneath the car, they constitute a fender or guard to protect a person from contact with bolt-heads, brackets, and other low hanging or depending parts of the car.

When the parts are in their normal position, Fig. 2, which is the position the parts occupy when the fender fingers are in their elevated position, the lateral lugs H are acted upon by the weight of the bifurcated or slotted rod D, and since these lugs H are about centrally between the hooked end of the trip-lever and the pivotal point thereof, the trip-lever is held in engagement with the pin G on the lever I, whereby jars, jolts, or vibrations are not liable to accidentally disconnect the trip-lever E from engagement with the lever I. The force or pressure required to move the fingers C, and thus operate the trip devices or trip mechanism can be regulated by changing the position of the lugs H and varying the angle of inclination of the inclines L.

While I have illustrated the finger-raising lever I as extending vertically, so that it can be placed within convenient reach of the grip-man, or motorman, or other attendant, I wish it clearly understood that this lever can be otherwise arranged without affecting the spirit of my invention.

The improvements described can be readily applied to existing cars, or to cars now in use without material or substantial change in the construction of the cars.

Having thus described my invention, what I claim is—

1. The combination of a vertically swinging pick-up fender, composed of a plurality of independently movable fingers extending forward from a suitable support, finger-raising mechanism, and trip devices for holding the finger-raising mechanism and maintaining the fender-fingers in their raised position until an obstruction is encountered which actuates the trip devices, substantially as described.

2. The combination of a vertically swinging pick-up fender, composed of a plurality of independent elastic fingers extending forward from a suitable support and adapted to move in the arc of a circle to and from the surface traversed, a lever for simultaneously raising all the fingers, and trip devices for holding the lever and maintaining the fender-fingers in their raised position until an object is encountered which actuates the trip devices, substantially as described.

3. The combination of a vertically swinging pick-up fender, composed of a plurality of independently movable fingers extending forward from a suitable support and adapted to move in the arc of a circle to and from the surface traversed, a lever for raising the fender-fingers, a trip-lever for engaging the finger raising lever, a lengthwise movable rod having means for moving the trip-lever out of engagement with the finger-raising lever, and means for operating the said lengthwise movable rod, substantially as described.

4. The combination of a vertically swinging pick-up fender, composed of a plurality of independently movable fingers extending forward from a suitable support, a lever for simultaneously raising all the fender fingers, a pivoted trip-lever for engaging the finger raising lever, a lengthwise movable rod having means to move the trip-lever out of engagement with the finger-raising lever, and pendent swinging finger-guards for moving the said rod lengthwise, substantially as described.

5. The combination of a vertically swinging pick-up fender, composed of a plurality of independently movable inherently elastic fingers extending approximately in a horizontal plane from a suitable support and adapted to move vertically in the arc of a circle to and from the surface traversed to pick up and retain an object, with means for raising and lowering the said fingers, substantially as and for the purposes described.

6. The combination with a suitable support, of a plurality of independently movable fingers extending approximately in a horizontal plane from said support and each composed of an inherently elastic wire or rod bent between its extremities into approximately U-shape, for picking up and retaining a person or object encountered on the surface traversed, substantially as described.

7. The combination of a pick-up fender, composed of a plurality of fingers extending forward from a suitable support and adapted to pick up and retain a person or object encountered on the surface traversed, a lever for raising the fingers and holding them in an elevated position, and trip mechanism automatically operated when a person or object is encountered for releasing the lever and per-

mitting the fingers to drop and the lever to swing forward, substantially as described.

8. The combination of a pick-up fender, composed of a plurality of fingers, a lever for raising the fingers, a trip-lever for engaging the finger-raising lever to hold the fingers in their elevated position, a movable rod having a part to operate upon and move the trip-lever out of engagement with the finger-raising lever, and pendent swinging finger-guards for moving the said rod, substantially as described.

9. The combination of a pick-up fender, composed of a plurality of fingers extending forward from a suitable support, a lever for raising the fender-fingers, a pivoted trip-lever adapted to engage a part of the finger-raising lever, a lengthwise movable rod having a part to operate upon and move the trip-lever out of engagement with the finger-raising lever, and means for moving the said rod lengthwise, substantially as described.

10. The combination with a pick-up fender, composed of a plurality of fingers extending forward from a suitable support, a finger-raising lever, a pivoted trip-lever adapted to engage the finger-raising lever and provided with a suitable lug, a lengthwise movable rod having an incline to act upon the lug of the trip-lever and move the latter out of engagement with the finger-raising lever, and means for moving said rod lengthwise, substantially as described.

11. The combination of a pick-up fender, composed of a plurality of fingers extending forward from a suitable support, a finger-raising lever, a trip-lever provided with laterally projecting lugs, a lengthwise movable rod having inclined portions, and pendent swinging finger-guards for moving said rod lengthwise, substantially as and for the purposes described.

12. The combination with a suitable pick-up fender, a lever for raising the same, and trip mechanism for holding the lever and maintaining the fender-fingers in their raised position, of a transverse rod, and laterally elastic fingers mounted on said rod and having their extremities pressing toward one another to preserve the fingers in proper position, substantially as described.

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

ELDRIDGE J. SMITH.

Witnesses:
S. A. TERRY,
A. M. TERRY.