

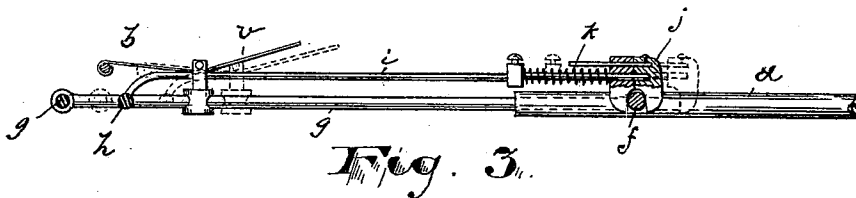
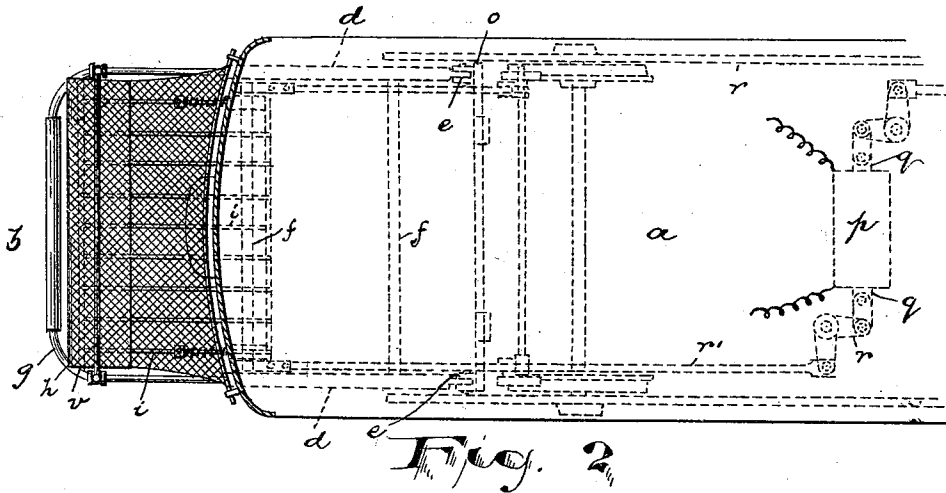
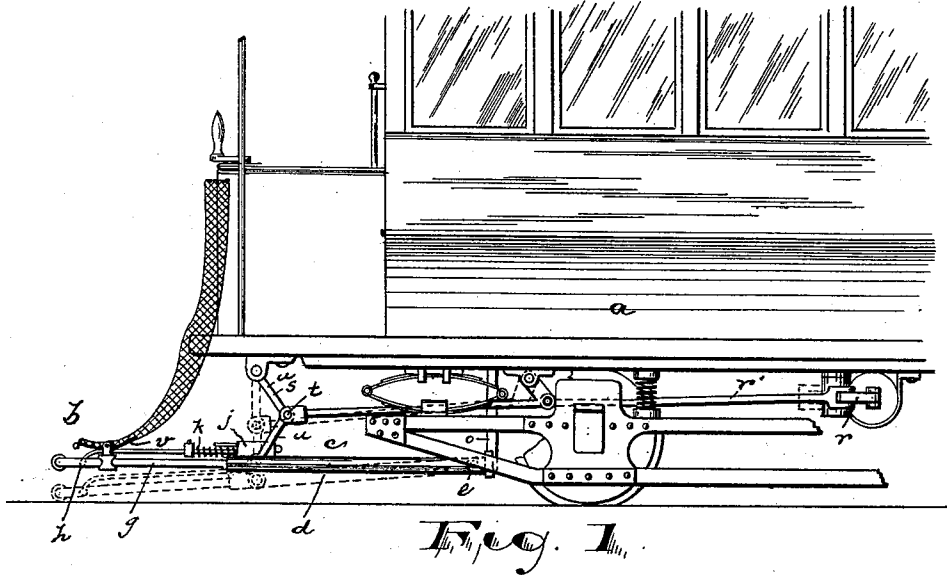
(No Model.)

2 Sheets—Sheet 1.

C. SULLIVAN.
CAR FENDER.

No. 543,972.

Patented Aug. 6, 1895.



WITNESSES: _____ INVENTOR:

Robert Solberger
Louise Brown.

Cornelius Sullivan,

BY *Drake & Co.* ATTY'S.

(No Model.)

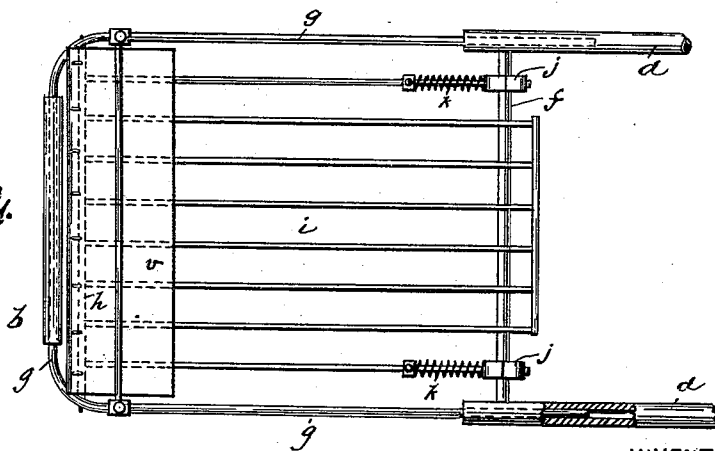
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Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CORNELIUS SULLIVAN, OF NEWARK, NEW JERSEY.

CAR-FENDER.

SPECIFICATION forming part of Letters Patent No. 543,972, dated August 6, 1895.

Application filed December 17, 1894. Serial No. 532,010. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS SULLIVAN, 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.

The general objects of this invention are to secure a more perfectly automatic fender, requiring no careful preliminary adjustment or unusual action on the part of the motor-man as the car is about to strike the person or object on or in the track or path of the car; to enable the fender to be quickly brought down to a point of contact with the road-bed or rails immediately before the person is struck, so that in falling it will be impossible for the said person to get under the fender wholly or in part, and thus be crushed or greatly injured; to enable the device to automatically throw the person falling upon the fender back from the forward edge thereof and to hold him there out of danger; to enable the fender to be held automatically up from the track when the car is in motion, so as to allow the usual vibration of the car without any contact of said fender with the track, and to secure other advantages and results, some of which will be referred to hereinafter in connection with the description of the working parts.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several figures, Figure 1 is a side elevation of a portion of a car having the improved fender. Fig. 2 is a plan of the same. Fig. 3 is a sectional detail showing the arrangement of certain springs by means of which the force of impact is reduced, so as to prevent injury to the person or object in the path of the car; and Fig. 4 is a detail plan, partly in section to show the relation and operation of certain parts more clearly.

The invention consists in the improved car-

fender and in the combinations and arrangements of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

In said drawings, *a* indicates the car, and *b* the fender disposed at the ends thereof so as to pick up and prevent injury to persons or things in the way of the car as it progresses over the track or road-bed.

To the under side of the car, or in other suitable position thereon, is formed a frame *c*, having in connection therewith tubular extensions *d*, which are preferably pivoted at *e*, so as to allow a limited vertical play of the fender. Said tubular extensions are connected near their forward and rear ends by transverse bars *f*.

The forward ends of the tubular extension are open to receive, telescopically, the sliding border-frame *g*, which consists of a U-shaped rod, the ends of which are held within the tubular extensions.

Near the forward part of the U-shaped rod is pivoted the forward bar *h* of the fender-grating *i*, so that said grating is allowed to be raised or lowered at its rear end with respect to the transverse bars *f*.

The grating *i* may consist of wire-netting or a series of bars connected to form a griddle-like structure, as shown. At the rear end of said griddle-like structure the same is provided with downwardly-extending jaws *j*, adapted to lie on opposite sides of the connecting-bars *f*, so that said structure will be prevented from sliding forward or rearward on the frame. When the griddle-like portion of the fender is drawn forward and the jaws are caught on the forward connecting-bar *f*, the said fender will be held in extended position to receive and carry the person engaged by the moving car. The said jaws are movably attached to the griddle-like structure, as in Fig. 3, where the said jaws *j* are movably held to said structure by springs *k*, which admit a limited movement of said structure, so that when the latter engages the person or obstruction the blow will be cushioned and serious injury prevented.

When the vertically-movable construction is employed, as shown in Fig. 1, and the frame *c* is pivoted upon a suitable fixture of the car, such as the wheel-guard *o*, means are em-

played for raising and lowering the fender so that its forward edge will fall to the ground, or very near thereto, when the motive power is cut off, and to be elevated to a position allowing the car to vibrate on the track as the said car moves rapidly forward without any interference of said fender with the road-bed. The said fender is operated automatically, so that when the motorman cuts off the motive power preliminary to stopping the car, the means for holding the fender will be released without special manipulation and the fender will gravitate to its lower position. To this end I provide an electromagnet *p*, Figs. 1 and 2, which is in circuit with the ordinary electric-circuit wires feeding the motor of the car with propelling force. The armature *q* of this magnet is in train with levers and connecting-rods extending to the movable part of the fender. Of this train, *r* indicates a bell-crank connecting with the armature; *r'*, a connecting-rod extending to the front or end of the car; *s*, a toggle receiving said connecting-rod at its center joint *t*. One of the sections *u* of the toggle is connected to the bottom of the car or other fixture and the other section to the pivoted fender, so that when the connecting-rod is drawn backward by the armature and bell-crank and the sections of the toggle are brought into position at an angle, as indicated in full lines in Fig. 1, then the fender is raised to its elevated position or lies approximately horizontal. This position is assumed when the current is turned on by the motorman and the electromagnet, which may be a solenoid, is brought into circuit with the motor.

When the motor and electromagnet are cut off from the source of power by means of the ordinary controller, the electromagnet becomes demagnetized and allows the fender to gravitate to the position shown in Fig. 1 in dotted outline.

On the upper side of the fender, toward its front edge, is preferably arranged a tilting board or plate *v*, which is preferably of sheet metal. It is bent longitudinally and angularly, with its edges upturned, its forward edge being curved downwardly, as shown clearly in Fig. 3. The tilting board is so disposed as to throw the body falling thereon backward, the greater weight of the body lying on the rear flange, which is pressed down upon the grating, raising the forward flange, so that there will be no chance for the body rolling forwardly off from the fender.

Over the fender, as thus described, is arranged a netting of soft fibrous material to cushion the falling object. This is secured to the dashboard and to the forward edge of the tilting board.

Having thus described the invention, what I claim as new is—

1. The improved fender for cars in which is combined with a suitable support, and a fender movable to and from the track, of an electrically controlled fender elevator and its electrical appliances, and means under the control of the motorman for affecting the electrical appliances to raise or lower the fender, substantially as set forth.

2. The combination with the car, of an electrically controlled fender and electrical appliances in connection therewith and under the control of the motorman for operating said fender, substantially as set forth.

3. The combination with the car and its electrical motive appliances, of an electromagnet and its armature in circuit with said motive appliances, a vertically movable fender and a train of levers and rods connecting with said fender and armature, substantially as set forth.

4. The combination with the fender and its supports having tubular extensions on which said fender slides, of a toggle for raising and lowering said fender, a connecting rod and levers operating said toggle, an armature and electro-magnet and electric circuit appliances under the control of the motorman.

5. The combination with the fender having tubular extensions, of a U-shaped border piece the ends of which slide in said tubular extensions, said U-shaped piece having near its forward part, the bar, *h*, of a grating, *i*, said grating carrying jaws, *j*, and having a movement independent of said U-shaped piece to admit an engagement of said jaws, substantially as set forth.

6. The combination in a fender, of tubular extensions attached to the car and having transverse bars, *f*, *f*, near their front and rear ends, a U-shaped border piece carrying a pivotal grating and means for engaging said bars, *f*, *f*, holding said grating in its extended or rearward position, substantially as set forth.

7. The combination with the U-shaped piece and its grating or gridiron-like structure, and a supporting frame having transverse bars, of jaws movably secured to said grating and engaging said transverse bars and springs holding said jaws to said grating, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 7th day of December, 1894.

CORNELIUS SULLIVAN.

Witnesses:

CHARLES H. PELL,
LOUISE BROWNE.