(No Model.)

A. F. BOARDMAN.

STREET CAR FENDER.

No. 529,357. Patented Nov. 20, 1894.

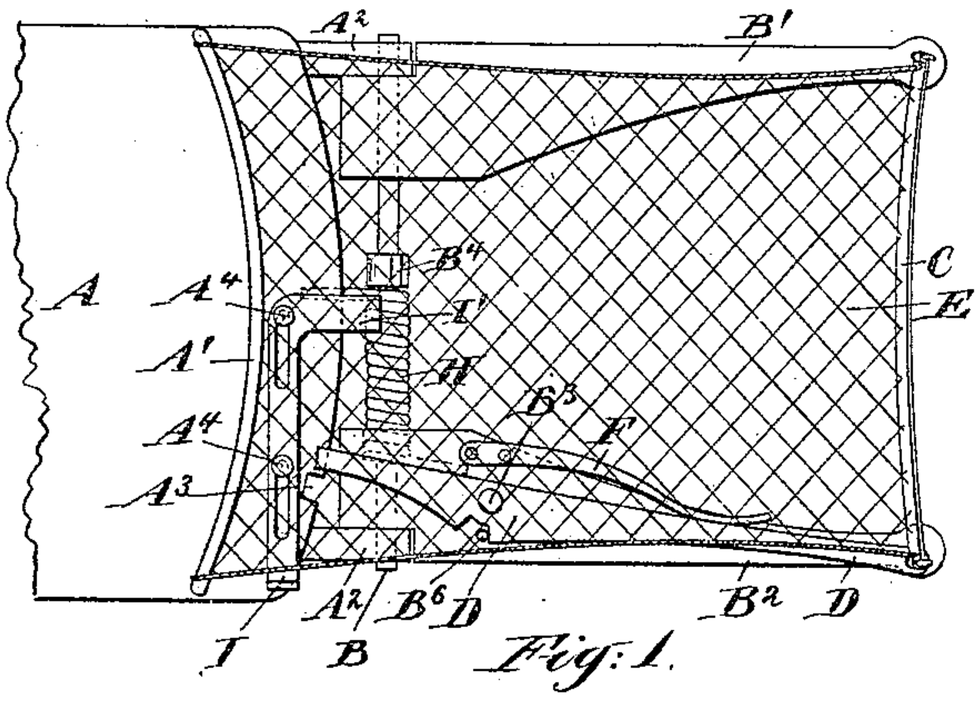


Fig: 1.

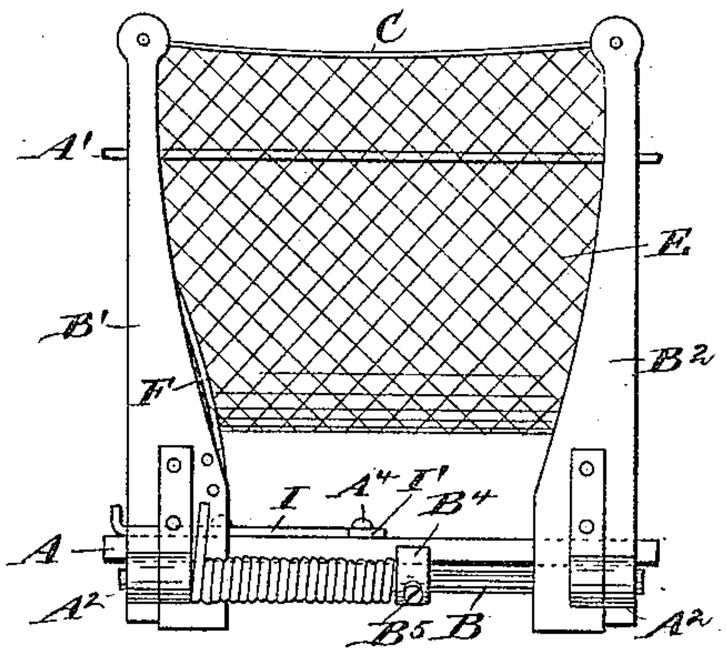


Fig: 2.

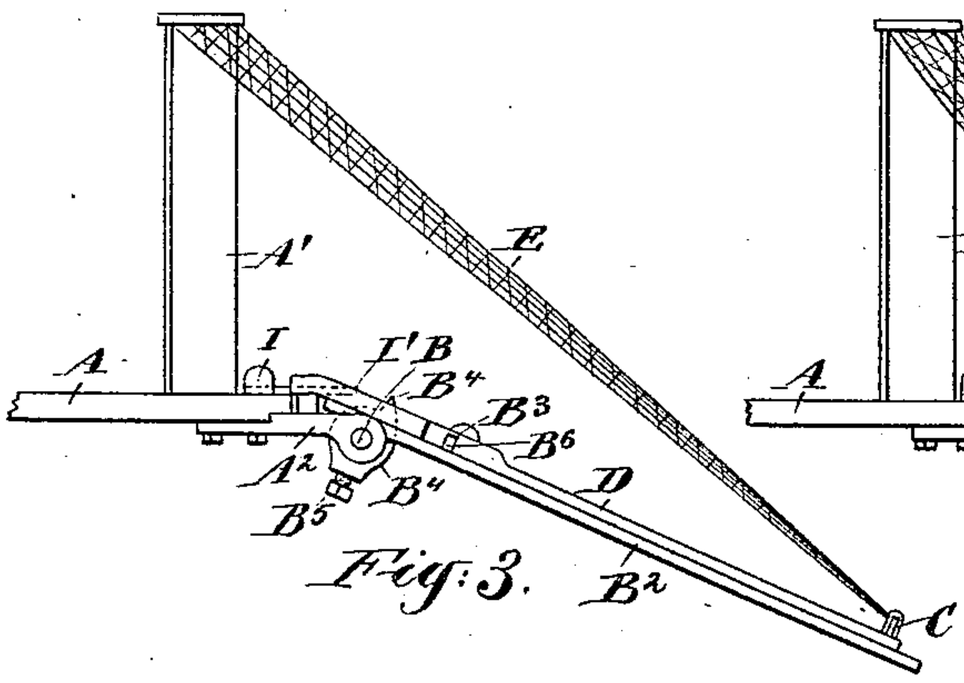


Fig: 3.

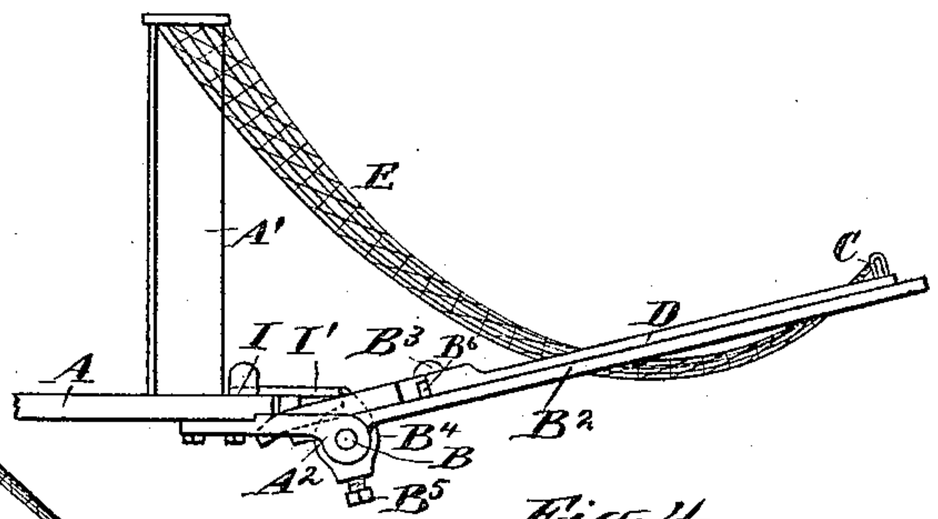


Fig: 4.

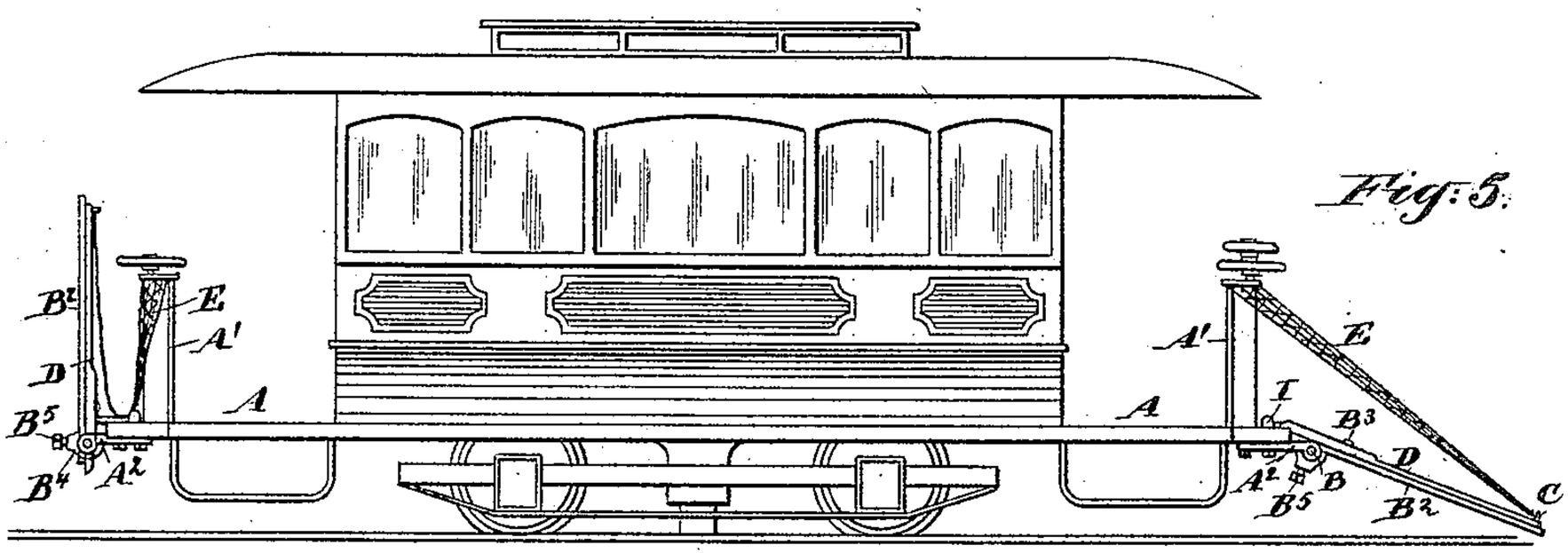
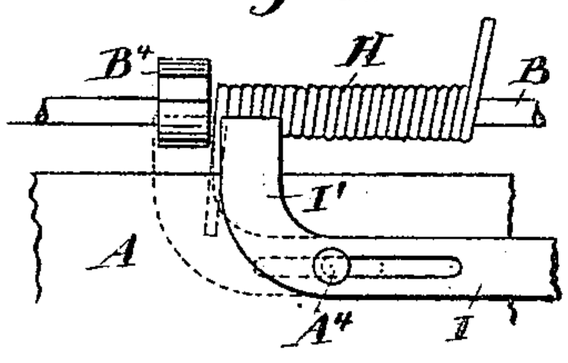


Fig: 5.

Fig: 6.



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UNITED STATES PATENT OFFICE.

ALPHONSO F. BOARDMAN, OF BROOKLYN, NEW YORK.

STREET-CAR FENDER.

SPECIFICATION forming part of Letters Patent No. 529,357, dated November 20, 1894.

Application filed February 17, 1894. Serial No. 500,512. (No model.)

To all whom it may concern:

Be it known that I, ALPHONSO F. BOARDMAN, a citizen of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented a certain new and useful Improvement in Street-Car Fenders, of which the following is a specification.

My improvement relates to that class of constructions particularly applicable to trolley and cable cars in which there is a fender at the front. I employ a yielding net-work of sufficient strength extended from the top of the front railing to a flexible band stretched across near the street surface, arms, one on each side, with a yielding connection between, adapted to strike gently and to receive and hold any person or object which may be on the track, a spring exerting force to promptly lift the arms when required, an automatic detaching means acted on by the contact with any object on the track and an adjustable stop which controls the extent to which the lifting of the arms and the consequent slackening of the net may be carried. My fender can be raised to a perpendicular position, and thus conditioned occupies very little space; but when it is automatically lifted by contact with any object on the track, the stop arrests the lifting at a low angle, only such as will give a sufficient slack to the net to hold any person or object received in it.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a plan view showing the novel parts extended in position for use, with a portion of the car to which they are attached. Fig. 2 is an end view showing the novel parts in the elevated and idle position, which they may be allowed to assume when the device is out of use. Fig. 3 is a side elevation corresponding to Fig. 1. Fig. 4 is a side elevation showing the novel parts in the half elevated position. Fig. 5 is a side elevation on a small scale showing a car with my improvement applied at each end. At the right side it is in position for use; and at the left side it is raised into the idle position. Fig. 6 is a plan view of certain portions on a larger scale.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is the fixed body of the car, having an upright portion or dash-board A′ at the end of the ordinary construction. I attach brackets A^2 at the bottom supporting a transverse shaft B, having two rigid arms B′, B^2, extending forward, one on each side, with their ends smoothly rounded. The arm B^2 carries by a pivot B^3 on its upper surface a laterally turning lever D, the forward end of which stands about even with the end of the arm B^2 and consequently with that of the opposite arm B′. A flexible band C, extends across from the front end of the arm B′ to that of the lever D. A netting E extends upward and inward from this flexible band C, inclined as shown. It is secured to the upper edge of the dash-board A′. The rear end of the laterally turning lever D is adapted in one position of the parts to engage with a stop A^3 on the front of the car.

F is a spring fixed on the arm B^2, and acting on the lever D. This spring exerts a constant force tending to turn the lever D into the position to hold the band C extended, and to hold the lever engaged with the stop A^3. When any force acts on the flexible front band C pressing it rearward, such as is induced by the striking of such band against any person or object on the track, it draws the front end of the laterally turning lever D inward, or to the left, thereby slackening the tension on the front edge of the net E, and the same movement also carries the rear end of the lever D out of engagement with the stop.

Fig. 1 shows the parts in the position for holding the device down for work. It will be readily understood what are the changed relation of the parts when the lower lever D has, by the contraction of the flexible band C due to the striking of the band and consequently the net E against any person or object, been turned into the position to allow the device to be lifted and the net to be partially collapsed.

H is a long and efficient helical spring coiled around the shaft B and taking hold thereof, and abutting by its other end against a fixed portion of the car A so that it exerts a force

constantly tending to turn the shaft B in the direction to lift the arms B′, B², and their attachments, including the laterally turning lever D and the net E. When the car is in operation, this tendency is resisted by the contact of the rear end of the lever D with the stop A³ and the arms B′, B², are held down in a level or nearly level position, and the net E is held extended in the inclined position, shown in Fig. 3. But when any object is struck by the flexible band C, and the lever D is thereby turned sufficiently to disengage its rear end from the stop A³, the parts may be lifted.

When the car in moving rapidly strikes a person or object, and the apparatus is automatically released by the pressure of the flexible band C against such object, and the turning of the lever D causes it to release its engagement with the stop A³,—it is important to arrest the lifting motion at a partly elevated stage so as to hold the net partially extended. I attain this condition by means of a removable stop carried on a laterally movable slide I, guided by pins or screws A⁴, and carrying an arm I′, which extends forward as shown.

B⁴ is a dog set on the shaft B, and held adjustably by a pinching screw B⁵. When the slide I is moved to the left, it presents the arm I′ in the path of the dog B⁴ and arrests the rise of the arms B′, B², at an elevation which may be adjusted by slacking the screw B⁵ and turning the dog B⁴ within a wide range, but which may usually be set to allow an elevation of about thirty (30) degrees, as shown in Fig. 4. This is the desirable condition for holding any person or object which may be struck. The net E being slackened, first by the drawing of the front end of the lever D inward, and next by the rise of this lever, as also of the arms B′, B², makes a shallow but sufficiently hollow pocket which is well adapted to receive and hold any person or object without serious injury.

When the device is to be put completely out of use, as when the car is to move in the opposite direction so that this apparatus comes at the rear end, or under other circumstances when the cars are crowded together on the road or in a depot or shed, my attachment may be thrown completely out of use by allowing the spring H to hold the arms up in a perpendicular position close to the dash-board A′ of the cars. When it is desired to thus allow the device to rise completely out of use, the slide I must be moved to the right so as to become ineffective.

A sufficiently wide rectangular notch in the lever D, (see Fig. 1) receives a stud B⁶ set in the upper face of the arm B², and serves to restrain the turning motion of the lever D within proper limits.

It will be understood that the tension of the helical spring H need not be great. It is sufficient if it will exert a force sufficient to turn the shaft B in the direction to raise the arms B′, B² and their attachments against gravity and friction. When a person or animal is struck by the band C and falls upon the net E, the weight and inertia of the mass tend to collapse the net and this automatically tends to lift the arms B′, B², and their attachments to the required small extent.

I attach importance to the fact that my shaft B which extends across the car and forms the center on which the arms B′, B² and their attachments, including the lever D, band C and net F, turn, is a long distance in rear of the front edge of the fender and up at the level of the floor of the car. It follows from this high and rearward position of the shaft that the action is gentle in striking and lifting, and that if there are more than one person or object, the shaft and the entire apparatus can move over such persons or objects as have not been safely caught, and in case the car is soon stopped, none will be fatally injured.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. I have shown the front end of the arms B′ and B² as widened and rounded, and this form is preferred; but it is not essential. The arm B² may be considerably shorter, and the lever D may extend forward considerably beyond it; but I prefer the extension of the arm B² to coincide with or be a little beyond the lever D so as to protect the latter from any violence in striking another car or any other strongly resisting object.

I claim as my invention—

1. In a street car fender, a turning shaft extended across the car provided with arms and yielding material as a net extended between said arms and the car, in combination with a spring arranged to aid in lifting such arms and yielding material and a lever as D adapted to turn to a limited extent laterally, and a flexible band as C connecting such lever to the opposite arm arranged as shown so that the act of striking a person or object tends to turn such lever and allow the flexible material to partially collapse laterally, and also tends to turn the shaft and allow such material to also collapse longitudinally of the car, all substantially as herein specified.

2. In a street car fender a cross shaft B, having arms B′, B², a lever D pivoted on one of said arms, a stop A³ engaging such lever and holding it and the connected parts down, a band C extending from the extremity of the arm B to the outer extremity of the lever D, a flexible material as the net E attached to such band, and a stop as the stud B⁶ inclosed loosely in the notch *d* adapted to limit the lateral turning of the lever, all arranged for joint operation substantially as herein specified.

3. In a car fender the net E carried at the front with provisions as the spring H and the cross shaft B and arms carried thereon, for holding such net extended and allowing it to be lifted when a person or object is struck,

in combination with the slide I, movable at will by the attendant, arranged to serve as a stop to limit the rise of the net and its operating means when the device is in use, and to allow it to rise higher and occupy less room longitudinally when the cars are to be packed together, all substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

ALPHONSO F. BOARDMAN.

Witnesses:

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W. H. BUCK.