

(No Model.)

2 Sheets—Sheet 1.

B. HALL.  
FENDER FOR STREET CARS.

No. 535,165.

Patented Mar. 5, 1895.

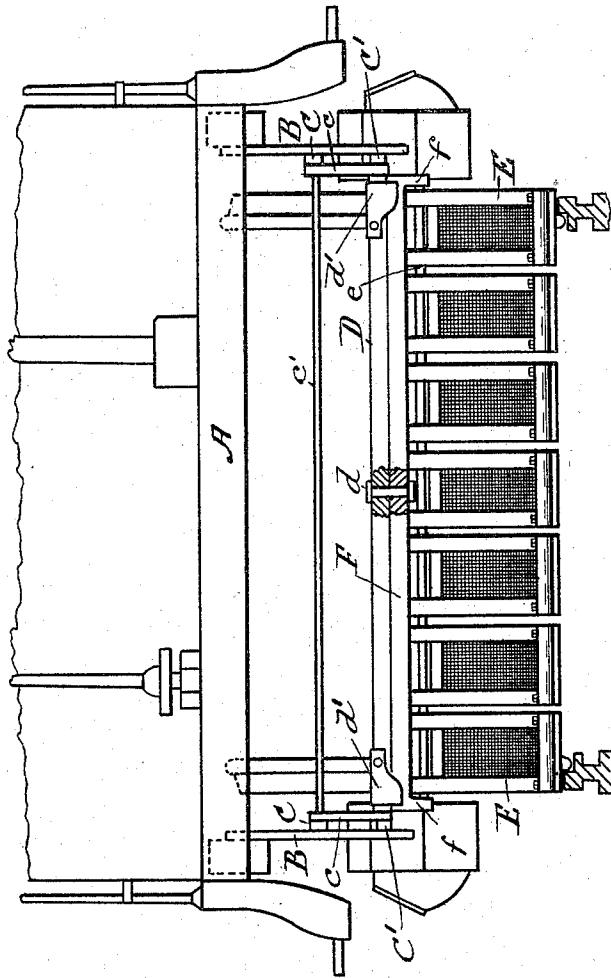


FIG. 1-

WITNESSES.

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Eva A. Guild

INVENTOR.

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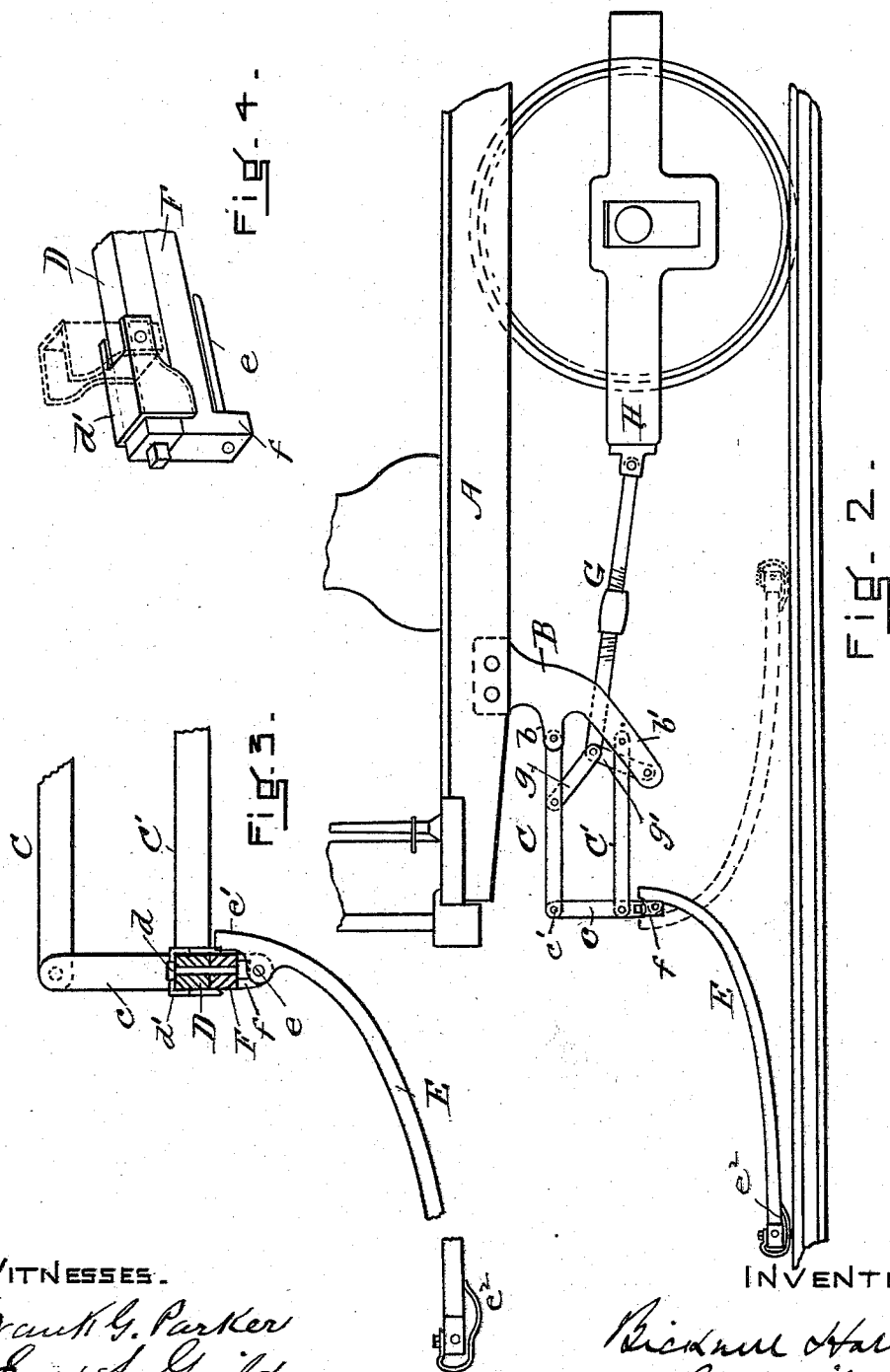
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INVENTOR.

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# UNITED STATES PATENT OFFICE.

BICKNELL HALL, OF TAUNTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO EDWARD P. COLEMAN, OF SAME PLACE.

## FENDER FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 535,165, dated March 5, 1895.

Application filed September 25, 1894. Serial No. 524,069. (No model.)

*To all whom it may concern:*

Be it known that I, BICKNELL HALL, of Taunton, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Fenders for Street-Cars, of which the following is a specification.

My improvement relates to that class of car fenders which are connected to the car platform and also to the truck in such a way that they will maintain a practically fixed level with relation to the road bed during the travel of the car, and it consists in certain details of construction relating especially to the raising and lowering of the fender and also to the throwing of the fender out of action, which I believe renders my fender superior in operation to other fenders heretofore built. It will be fully understood by reference to the drawings, in which—

Figure 1 is a front elevation of the best form of fender now known to me, Fig. 2 being a side elevation and Figs. 3 and 4 details.

A represents the platform of the car. To the under side of this platform at each side of the car, is attached a hanger B, from which the fender is hung. This hanger is provided with two arms *b*, *b'*. To the upper arm *b* is pivoted a connecting rod C, below which is pivoted a second connecting rod C', the outer ends of these rods being connected by a link *c* which maintains them at fixed relation to each other. To the lower end of each link *c* is attached a cross rod D, from which the fender proper is hung. The connecting rods C, C' are so pivoted to the hanger and the link *c* is so pivoted to the ends of these rods that any oscillating movement given to the rods will result in giving a vertical movement to the link and the fender connected thereto.

The fender proper is preferably constructed as follows: To the lower end of the link *c* is attached a rod D, square in cross section. To this is pivoted by a vertical pin *d*, a frame F which has an ear projecting downward from each end. A rod *e* runs across from ear to ear, and on this rod is hung a series of fingers, E each adapted to swing independent of the others. Each finger is extended upward in rear of the frame F, as shown at *e'*, Fig. 3, so that should the fingers strike anything, they will be prevented from retiring by con-

tact between this portion and the frame F and yet will be free to swing forward and up. The purpose of hanging this frame from the vertical pin *d* is to allow the fender to be turned about it under the car when not in use, for example, when its end of the car has become the rear end. Its position when so placed, is shown in dotted lines in Fig. 2. To hold the frame F in place, I provide a catch of some kind, for example, such as is shown in Figs. 1 and 4 of the drawings at *d'*, which can easily be turned up out of the way, when it is desired to turn the fender, but which ordinarily lies in the position shown in Fig. 1 and holds the frame securely in place.

My fender is raised or lowered, as the car oscillates on its springs, being preferably connected with the car truck for this purpose, in the following manner: To each connecting rod C is pivoted a link *g* which connects with one end of a rod G, the further end of which is pivoted to the car truck H. A second link *g'* connects the rod G to the hanger B. Thus a toggle is formed, which as its movements are controlled by the relative movements of the car and truck, insures the necessary relative movements of the fender.

As the car body oscillates and depresses or lifts the hanger B, the front end of the fender will be raised or lowered accordingly, owing to the action of the rod G on the toggle arms, while the system of connecting rods C, C' will be slightly raised or lowered as necessity may require, but in all cases the proportion of lifting will be slight and the fingers will be lifted vertically. I prefer to pivot the link *c* and connecting rod C by means of a rod *c'* in order to brace the parts stiffly.

It is best that the ends of the fingers be padded in some way, as for example, by rubber cushions in order that they may not injure any object which they strike. I prefer however, to provide a series of springs *e''*, each of which is so attached to the end of the fender that it will lie in front of the fender and form a cushion, and will also extend underneath it, being bent as shown so as to hold the end of the fender up, should it tend to strike the ground. Of course one spring, extending the length of the fender, may be used instead of a series of springs.

It is desirable that the connecting rod G may be made with a turn buckle or some other means of adjusting its length. Thus the level of the fenders may be adjusted.

5 This is a desirable feature especially in snowy weather, when the level of the road bed is higher than at other times. This feature also is applicable for use with other fenders which are operated by connecting rods.

10 It is obvious that the various parts of my invention may be used independently. For example, the toggle mechanism may be used with a different form of fender, one which has a solid frame instead of hanging fingers, and  
15 the vertical pivot and catch may also be used with a different form of fender, if desired. I have however, shown my invention in the best form known to me.

What I claim as my invention is—

20 1. In a fending device, in combination with a car body and its truck, a fender hung below the car and adapted to have a vertical movement, toggle arms, one of which is connected to said fender and the other with the  
25 car bottom, and a connecting rod connecting the joint of said toggle arms with the car truck, all as set forth.

2. In a fender lifting mechanism, means whereby a vertical movement is given to said  
30 fender, said means consisting of a hanger, two horizontal connecting rods pivoted thereto and a link connecting the ends of said connecting rods, all in combination with a fender hung from said link and means whereby  
35 said fender is lifted, as and for the purposes set forth.

3. In a fending device, in combination with a car body and its truck, a hanger located un-

derneath the car body, two or more pairs of horizontal arms C, C' pivoted to said hanger, 40 one below the other, and connected at their forward ends by a link c whereby there is formed with the hanger, a substantially rectangular pivoted frame and a fender hung from said frame, and operated substantially 45 as described.

4. In a fending device, in combination, a supporting frame, a fender pivotally connected thereto by a vertical pivot and adapted to turn through an angle of one hundred and 50 eighty degrees about said pivot, and one or more latches of the kind described adapted to lock said fender, all as set forth.

5. In a car fending mechanism, a fender pivotally hung below the platform of a car 55 and a connecting rod connecting said fender with the car truck and adapted to change the position of the fender as the car oscillates on said truck, said connecting rod being adjustable as to its length, whereby the position of 60 the fender with relation to the road bed may be adjusted, as set forth.

6. In a car fender mechanism, a fender hung below the platform of the car and a connecting rod connecting said fender with the 65 car truck and adapted to change the position of said fender as the car oscillates, said connecting rod being adjustable in length, whereby the location of the fender with relation to the road bed may be adjusted, as set forth. 70

In witness whereof I have hereunto set my hand this 24th day of September, 1894.

BICKNELL HALL.

Witnesses:

GEORGE O. G. COALE,  
EVA A. GUILD.