

No. 730,913.

PATENTED JUNE 16, 1903.

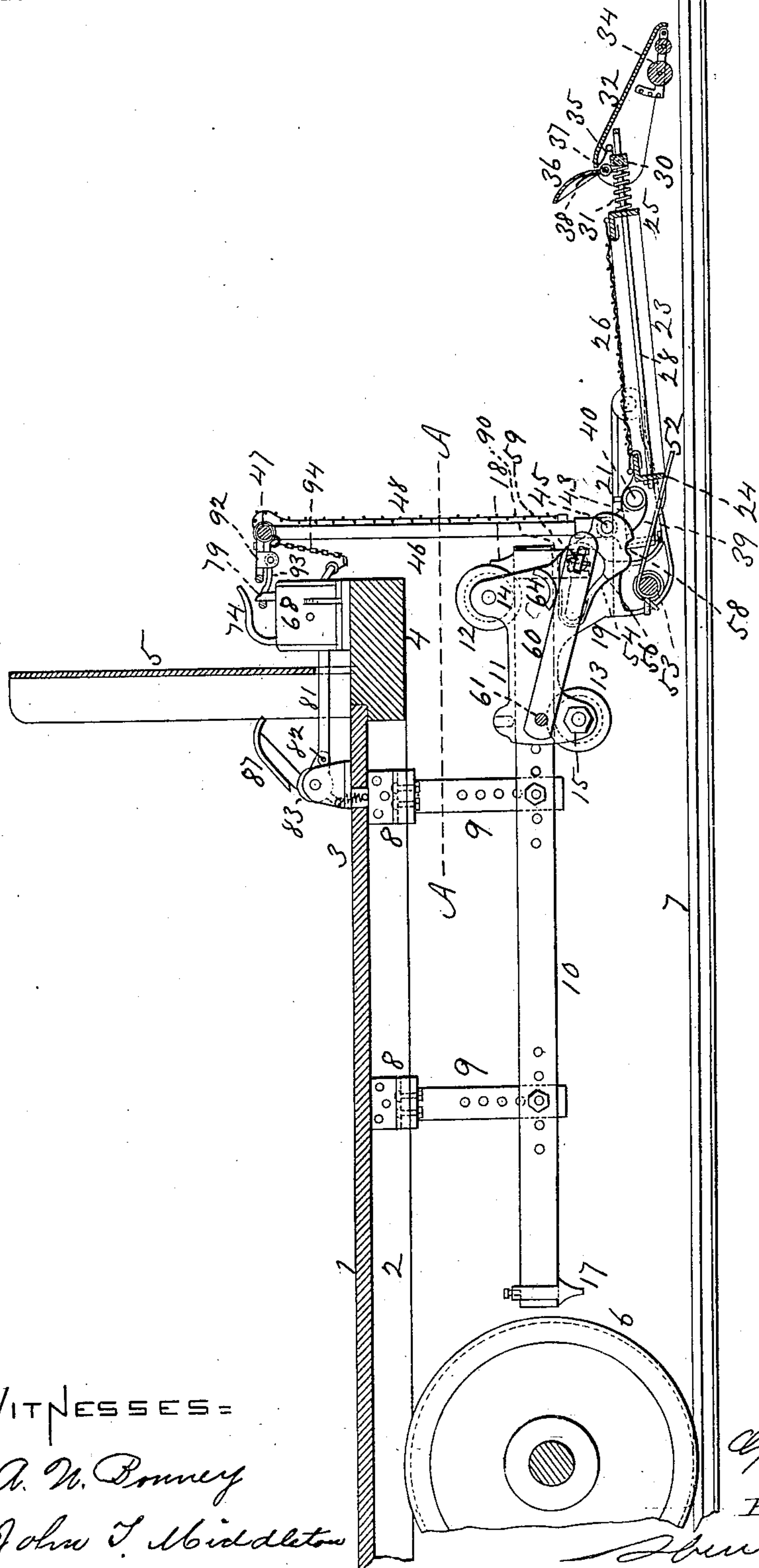
G. HIPWOOD.

FENDER FOR CARS OR OTHER VEHICLES.

APPLICATION FILED SEPT. 25, 1902

NO MODEL.

4 SHEETS—SHEET 1.



WITNESSES =

A. W. Bonney

John T. Middleton

INVENTOR=

George Hipwood

By his Atty.

Henry W. W. W. W.

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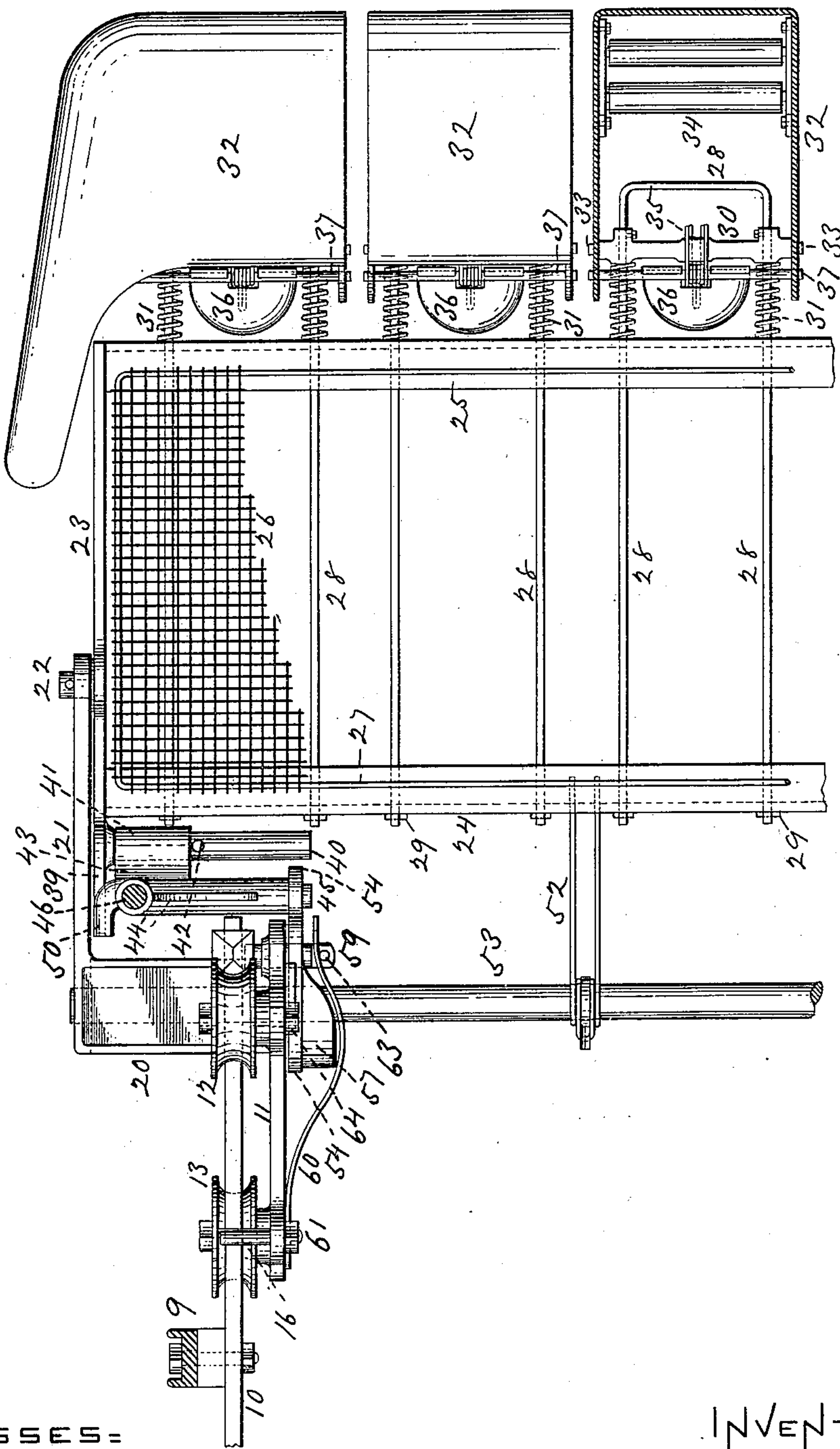


FIG. 2.

WITNESSES=

A. W. Bonney.  
John T. Middleton

INVENTOR=

George Hipwood  
By his Atty.  
Henry Williams

No. 730,913.

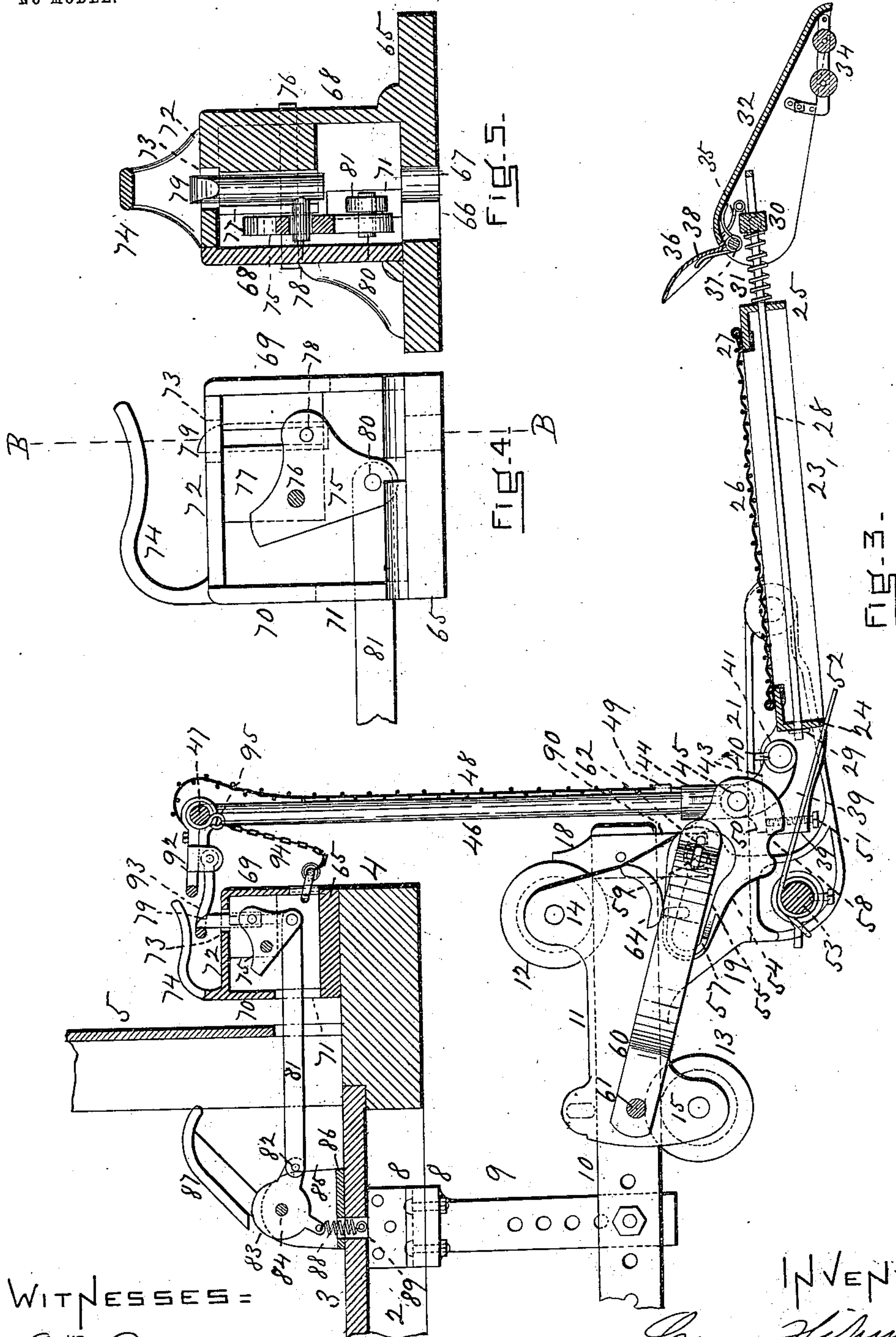
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4 SHEETS—SHEET 3.



WITNESSES=

A. M. Bonney.

John T. Middleton

INVENTOR=

George Hipwood,

By his Atty.

Sperry Williams



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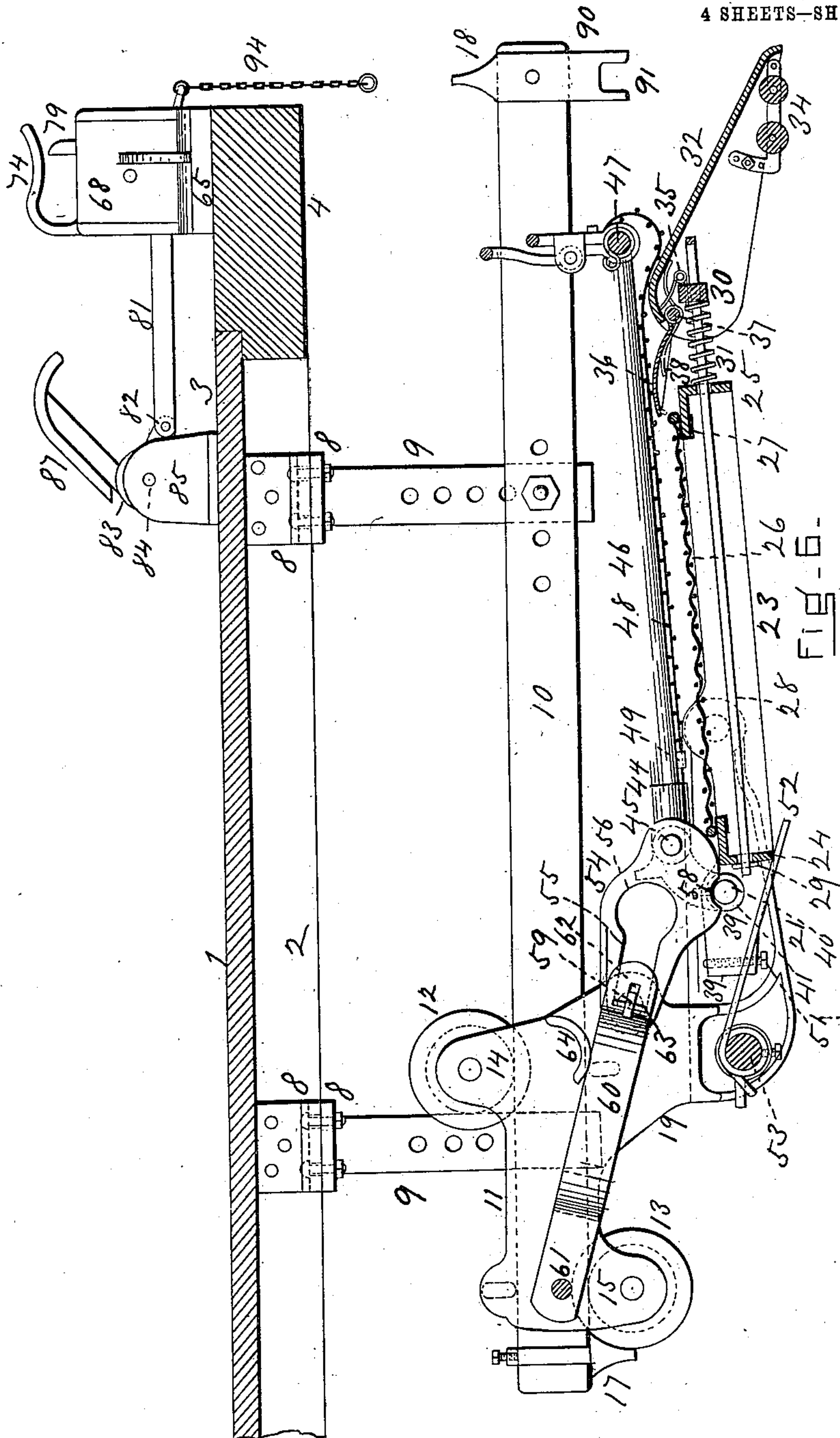
G. HIPWOOD.

FENDER FOR CARS OR OTHER VEHICLES.

APPLICATION FILED SEPT. 26, 1902.

NO MODEL.

4 SHEETS—SHEET 4.



WITNESSES:-

A. M. Bonney

John T. Middleton

INVENTOR=

George H. Woodward

By his Atty.

Henry Williams



## UNITED STATES PATENT OFFICE.

GEORGE HIPWOOD, OF LACONIA, NEW HAMPSHIRE.

## FENDER FOR CARS OR OTHER VEHICLES.

SPECIFICATION forming part of Letters Patent No. 730,913, dated June 16, 1903.

Application filed September 25, 1902. Serial No. 124,858. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE HIPWOOD, a citizen of the United States, residing in Laconia, in the county of Belknap and State of New Hampshire, have invented new and useful Improvements in Fenders for Cars or other Vehicles, of which the following is a specification.

This invention relates to fenders adapted particularly for use on street-cars and other vehicles propelled by electricity, cable, or other power aside from horse-power, and it relates more especially to the general style or class of fender illustrated and described in Letters Patent of the United States granted October 31, 1893, numbered 507,655; granted April 13, 1897, numbered 580,549; granted January 4, 1898, numbered 596,592; granted September 19, 1899, numbered 633,361, and granted January 1, 1901, numbered 664,863, to which reference is made.

My present invention is intended to be an improvement over and upon the inventions described in the said Letters Patent; and it has for its principal objects to produce a fender of the type mentioned which will be simple in construction and cheaper to manufacture than the ones referred to above and which will be fully as and even more efficient, to lessen the weight of the fender without injuriously affecting its strength, and in various particulars to improve its construction and operation and adapt it to the needs and the financial resources of street-railway companies.

The invention relates more particularly to improved connections between and making a part of the horizontal portion and the vertical or swinging portion of the fender and between the fender and its sliding support, to the means for lowering the vertical portion of the fender and for sliding both portions in folded condition under the car with the front edge of the horizontal portion suitably raised, to the releasing of tripping mechanism, and to other details of construction, all as fully described below and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal central vertical section of my improved fender applied to a car, a sufficient portion of the body of which is shown to illustrate the application of the

invention. Fig. 2 is an enlarged plan taken on line A, Fig. 1. Fig. 3 is an enlarged detail view in vertical section. Fig. 4 is an enlarged detail in elevation of the locking and releasing mechanism. Fig. 5 is a section taken on line B, Fig. 4. Fig. 6 is an enlarged view, partly in side elevation and partly in longitudinal vertical section, with the fender folded and slid under the car and the dashboard removed.

In the first five views the fender and the releasing mechanism are in their normal and usual position.

Similar characters of reference indicate corresponding parts.

1 represents a portion of the floor of the car; 2, the sills; 3, the platform; 4, the bumper, constructed in this instance of wood, but which may be of iron or other material; 5, the dashboard; 6, the wheels, and 7 a portion of the track.

Supporting-brackets 8, preferably angle-shaped, are secured to the inner sides of the sills 2, and bolted to their horizontal portions are the vertical hangers 9, there being preferably two hangers and a corresponding number of brackets on each side of the car. These hangers support near their lower ends on opposite sides of the car the horizontal rails 10, said rails and hangers being provided with lines of holes for the purpose of producing longitudinal and vertical adjustment.

11 represents a frame or plate, one being located inside or next the inner surface of each rail 10 and being adapted to slide with relation to and be supported by said rail by means of the rolls or wheels 12 and 13, supported, respectively, by the projecting portions 14 and 15 of said supporting-plate, the said roller 12 traveling on the upper edge of the rail 10 and the roller 13 traveling next the under edge of the rail. From the upper portion of the plate 11 there extends horizontally a small steadying-pin 16, Fig. 2, which projects over the rail near its upper edge. The travel of these supporting-frames 11 is limited by the downwardly-extending stops 17, near the rear ends of the rails 10, and the upwardly-extending stops 18, near their front ends, Figs. 1, 3, and 6, said stops being approximately curved to correspond with the rolls 13 and 12.



Rigidly secured to or integral with a downwardly-extending portion 19 of each supporting-plate 11 is the outwardly-extending horizontal plate or frame 20, from which there extends forward an arm 21, said plate and arm being suitably strengthened by thickened edges or in any other manner well known in the art, and the arm growing narrower toward its forward end, at which end each of said arms sustains a pivot 22, which supports the opposite ends or sides of the main horizontal fender or fender proper, said main fender tilting on said pivots and comprising the end bars 23, rear bar 24, and front bar 25, and a suitable netting 26, stretched on and secured to said bars by means of a frame 27, suitably attached to the bars. (See Figs. 2 and 3.) The bars 24 and 25, which are preferably angle-shaped, support slidingly a series of U-shaped rods 28, whose rear ends are provided with suitable nuts 29, whereby they are prevented from slipping out of the bar 24, whose front portions extend through the bar 25 and whose more extreme front portions are rigidly secured in horizontal frames or yokes 30, which are kept normally forward by springs 31, which surround the two portions of each U-shaped rod between said frames or yokes 30 and the bar 25. Each of these U-shaped rods supports, by means of the yoke or frame 30, a shoe 32, which is pivoted on the projecting ends 33 of said yoke or frame. Each of these shoes is provided with suitable rollers 34, adjustably sustained therein. The shoe is held with its front edge normally down by means of springs 35, which extend up from the frame 30, and each shoe has extending rearward and upward from it a wing 36, which is pivotally connected thereto by means of a horizontal rod 37 and is held up in the position indicated in Figs. 1 and 3 by a suitable spring 38, extending from said rod 37. The purpose of these wings is to bridge the space between the shoes and the main portion of the fender and when an object has fallen or rolled behind them upon said fender to prevent it from rolling forward on the shoes.

From the bars 23 of the main fender there project rearwardly extensions 39, Figs. 1, 3, and 6, said extensions bending slightly upward from the bars 23 and each being provided with an inwardly-extending horizontal spindle 40, located at the rear of and preferably slightly above the bar 24. Loose on each said spindle is a sleeve 41, prevented from lateral movement by a pin 42, and integral with this sleeve is a web or bracket 43, which connects it with a corner-piece 44, said corner-piece being practically a socket, from the lower portion of which there extends horizontally and inwardly a stud 45 and from the upper portion there extends the side bar 46, the two side bars being connected at their upper ends by the cross-bar 47 and constituting, with the netting 48, the bumper-guard or vertical and swinging portion of the fender, said netting being secured to that portion of the

fender by a suitable frame 49. The sleeves 41, therefore, constitute the pivotal connection between the vertical or swinging portion 70 of the fender and the main fender.

From each corner-piece 44 there extends rearward horizontally a cam-foot 50, Fig. 2, which rests and bears normally on the extension 39 beneath it, the cam-feet operating by holding down said extensions to sustain in a raised position the front end of the main portion of the fender, and hence the shoes 32. By means of set-screws 51, which extend through the extension 39 beneath the cam-feet, the height of the front end of the main fender may be regulated. A spring 52 extends under the rear bar 24 from the horizontal rod 53, to which it is secured, said rod being rigidly held at its opposite ends in the arms 21.

The inner or free end of each stud 45 extends into a suitable hole in a cam-plate 54, said cam-plate being provided with the slot 55, broadened at its forward portion 56 with a horizontally-extending cam 57, Fig. 2, which is integral with and projects inwardly from the plate next the rear and upper edges of the slot 55, and with a curved recess or notch 58, whereby the cam-plate can rest on the spindle 40 when the folding fender or bumper-guard is swung down upon the main fender, as shown in Fig. 6. A locking-bolt 59 extends through the slot 55, slidingly through a suitable hole in the portion 19 of the plate 11, and thence normally into a notch 91, Fig. 6, in an extension 90, projecting downward from the forward stop 18, and a spring 60 is secured at its rear end at 61 to the rail 10, while its front end engages with the bolt 59 by means of a slot 62, and is held in such engagement by a cross-pin 63, extending through the bolt 59, and a suitable shoulder on said bolt, said spring bearing normally on or against the cam 57. The cam-plate, spring, and connecting mechanism are duplicated on each side of the fender inside and next the frame or plate 11, and each said frame or plate is provided on its inner surface with a curved guiding-rib 64 for limiting or guiding the movement of the cam-plate 54.

Mounted on and secured to the bumper near its forward end is a structure consisting of a base 65, provided with an opening 66, elongated at 67, sides 68, front 69, rear wall 70, provided with a suitable opening at 71, and top 72, provided with a suitable opening 73. Mounted on the top is a forwardly-extending guard 74. (See Figs. 1, 3, 4, 5, and 6.) A plate 75, somewhat of the nature of a bell-crank, is pivotally hung at 76 and supported by a hanger or bracket 77, rigidly secured to and within the box or structure above described.

At 78 a vertically-moving bolt 79 is pivotally connected with the plate 75, said bolt being beveled at its upper end rearward, as shown, and extending normally up through the opening 73 in the top 72.



At 80 a connecting-bar 81 is pivoted at its forward end to the plate 75, and its rear end is pivotally connected at 82 to the disk-lever 83, pivotally secured at 84 to and between ears 85, which extend up from a base 86, mounted on the platform 3. From the disk-lever 83 there extends forward and upward normally a pedal 87, said pedal being held in the position indicated in Figs. 1, 2, and 3 by a spring 88, whose opposite ends are secured to the disk-lever and to the platform, which is recessed or bored for the purpose at 89. A double bail 92 93 is secured to the bar 47 of the bumper-guard or swinging fender, and a guard-chain or safety-chain 94 has one end connected with the structure for the releasing mechanism above described, while the other end is adapted to be caught over a suitable hook 95 on the bar 47.

In all the figures of the drawings except Fig. 6 the fender is in its normal position—that is to say, extended out in front of the car, with the front end of the main or horizontal fender sufficiently raised to lift the shoes 32 off the ground and with the vertical portion or bumper-guard of the fender held up by one of the bails 93, which is caught over the bolt 79 of the tripping or releasing mechanism. The fender is locked in such position, so that it cannot be pushed back, by means of the bolts 59, which extend into the notches 91 of the downward extensions 90 from the stops 18, which are rigid on the stationary rails 10. In case of an impending accident the motorman presses his foot on the pedal 87, thus rotating the disk-lever 83 against the power of the spring 88, and by means of the link 81 rotating the plate 75, which pulls down the bolt 79 and releases the bail 93, thus allowing the bumper-guard to swing forward and the main fender to drop onto the track, the guard-chain 94 being made long enough for the purpose. When the fender is to be folded up and slid under the car, the chain 94 is detached from the hook 95, and the vertical portion or bumper-guard is folded down upon the horizontal portion of the fender. As it is thus swung down the studs 45 pull forward and down the cam-plates 54 until their notched portions 58 bear on and press down the spindles 40, thus lifting the front of the fender, the cams 57 pressing out the forward ends of the springs 60 and withdrawing the locking-bolts 59 from the notches 91. The two portions of the fender being thus folded and released from the stationary portion of the car, they are slid together under the car into the position indicated in Fig. 6. When they are again to be put into use, they are drawn forward together as far as the stops 18 will allow and the bumper-guard or swinging portion swung up, thus allowing the springs 60 to push the bolts 59 into the notches 91, lifting the cam-plates 54 off the spindles 40, and finally forcing up the front of the main or horizontal portion of the fender by pressing down the extensions 39 by means of the

cam-feet 50. One of the bails 92 93 is then caught over the upper end of the bolt 79, which is forced up by the spring 88, and the fender is ready for use.

It will be noticed that this fender, especially in that portion which connects the horizontal main fender with the vertically-swinging fender and in the portion which connects the horizontal fender with its traveling support, I have aimed at simplicity, at economy in construction, and to reduce weight. The parts 40 and 45 do not extend across the fender, but are regarded as strong and rigid, while comparatively light. It is intended that this fender shall be an improvement over all the fenders above referred to in this specification without departing from the general principle of a fender comprising two parts, one of which swings down and folds upon the other, both sliding together under the car, and by such improvement to render the fender cheaper to manufacture and more adapted to the needs of the street-railway companies without in any manner weakening it or impairing its efficiency, but rather rendering the fender stronger and by reason of its few parts more durable and less liable to get out of repair.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a fender of the character described, a substantially horizontal pivotally-supported main fender; extensions projecting rearward from said main fender near its opposite ends or sides; spindles 40 extending for a limited distance inward horizontally from said extensions; corner-pieces secured to the lower ends of the side bars of a swinging fender or bumper-guard pivotally connected with said spindles; studs 45 extending inward horizontally from said corner-pieces; longitudinally-movable carriages supporting the main portion of the fender; and mechanism intermediate of the said studs and the carriages whereby the swinging fender may be folded down upon the main fender, substantially as set forth.

2. In a fender of the character described, a substantially horizontal pivotally-supported main fender; extensions 39 projecting rearward therefrom near its opposite ends or sides; a vertically-swinging fender or bumper-guard pivotally connected at its lower edge with the rear edge of the main fender; the cam-foot 50 extending rearward from the lower portion of the swinging fender over and upon the said rearward extensions when said swinging fender is in a raised position, and thereby operating when the swinging fender is lifted, to depress the rear portion of the main fender, and when the swinging fender is folded down upon the main fender, to release the rear end of the main fender, substantially as set forth.

3. In a fender of the character described, a substantially horizontal pivotally-supported main fender; extensions 39 projecting rear-



ward therefrom near its opposite ends or sides; a vertically-swinging fender; spindles 40 extending horizontally inward for a limited distance from the said extensions; socketted corner-pieces 44 secured to the lower ends of the side bars of the swinging fender, and provided with the webs 43 and sleeves 41, said sleeves pivotally connecting the corner-pieces on the swinging fender with said spindles; studs 45 extending inward for a limited distance horizontally from said corner-pieces; longitudinally-traveling carriages supported by the car-body and sustaining the fender; and sliding connections between said carriages and the free ends of the studs, substantially as set forth.

4. In a fender of the character described, a substantially horizontal pivotally-supported main fender; longitudinally-traveling carriages provided with forwardly-extending arms for the direct pivotal support of said main fender; a vertically-swinging supplemental fender or bumper-guard pivotally connected at its lower edge with the rear edge of the main fender; slotted cam-plates 54 provided with the outwardly-extending cams 57; and the horizontal locking-bolts 59 extending normally through the slots in said cam-plates and into engagement with portions rigid with the car, said cam-plates being pivotally connected at their forward ends with the lower portion of the swinging fender, substantially as set forth.

5. In a fender of the character described, a substantially horizontal pivotally-supported main fender; longitudinally-traveling carriages provided with forwardly-extending arms for the direct pivotal support of said main fender; a vertically-swinging supplemental fender or bumper-guard pivotally connected at its lower edge with the rear edge of the main fender; slotted cam-plates 54 provided with the outwardly-extending cams 57; the horizontal locking-bolts 59 extending normally through the slots in said cam-plates and into engagement with portions rigid with the car; and springs extending from the traveling carriages, bearing against the cams, and with their free ends in engagement with said bolts and operating to press the same normally inward, said cam-plates being pivotally connected at their forward ends with the lower portion of the swinging fender, substantially as set forth.

6. In a fender of the character described, a substantially horizontal pivotally-supported main fender; longitudinally-traveling carriages provided with forwardly-extending arms for the direct pivotal support of said main fender; a vertically-swinging supplemental fender or bumper-guard pivotally connected at its lower edge with the rear edge of

the main fender; slotted cam-plates 54 provided with the outwardly-extending cams 57; the rails 10 supported by the car-body; the stops 18 rigidly secured to said rails and provided with the downward notched extensions 90, 91; and the horizontal locking-bolts 59 extending normally through the slots in said cam-plates and into said notched extensions, said cam-plates being pivotally connected at their forward ends with the lower portion of the swinging fender, substantially as set forth.

7. In a fender of the character described, a substantially horizontal pivotally-supported main fender provided with horizontal inwardly-extending spindles 40 near the rear edge thereof; longitudinally-traveling carriages provided with forwardly-extending arms for the direct pivotal support of said fender; a vertically-swinging supplemental fender or bumper-guard pivotally connected at its lower edge with the rear edge of the main fender; and the cam-plates 54 provided with the recesses 58 adapted to fit over and rest upon said spindles when the swinging fender is folded upon the main fender, said cam-plates being pivotally connected at their forward ends with the lower portion of the swinging fender, substantially as set forth.

8. In a fender of the character described, the releasing mechanism, consisting essentially of the structure comprising the base mounted on the bumper, the side walls, front wall 69, rear wall 70 provided with a suitable opening; and top 72 provided with a suitable opening; the crank-plate 75 pivotally hung in said structure; a vertically-moving bolt pivotally connected with the crank-plate and extending normally up through the top of the structure; the disk lever 83 provided with the pedal 87 held normally raised by means of a spring; and a connecting-bar pivotally secured at its opposite ends to said disk lever and crank-plate, substantially as set forth.

9. In a fender of the character described, in combination with the main or horizontal fender and a series of shoes 32 held in advance of said fender by intermediate springs; a series of U-shaped supporting-rods 28 each said U-shaped rod moving horizontally in the main fender and supporting on its closed end one of said shoes, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE HIPWOOD.

Witnesses:

HENRY W. WILLIAMS,  
A. W. BONNEY.