

W. H. MARTIN.
LIFE SAVING DEVICE FOR STREET CARS.
APPLICATION FILED OCT. 8, 1909.

991,160.

Patented May 2, 1911.

2 SHEETS-SHEET 1.

Fig. 2.

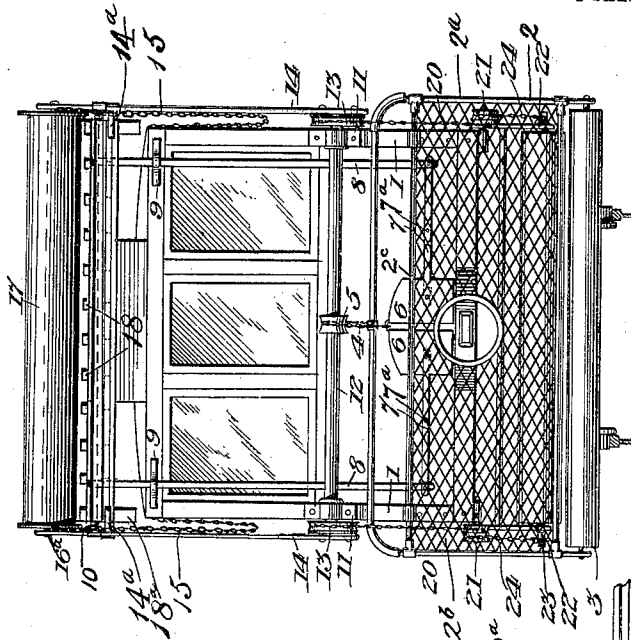
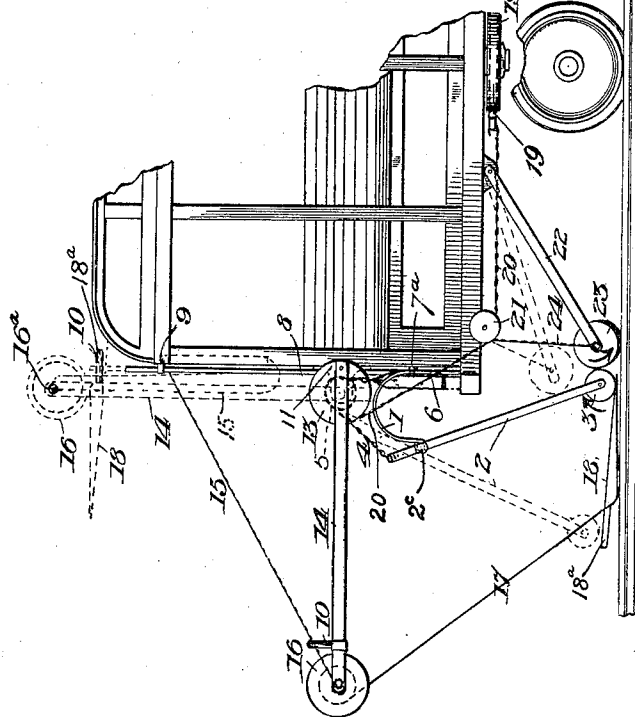


Fig. 1.



Witnesses:
Lewis Lott.
David L. Windsor

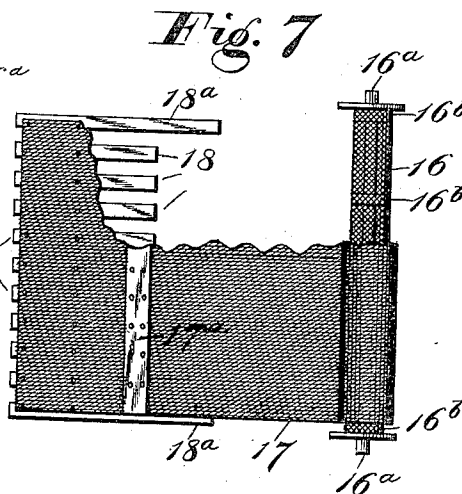
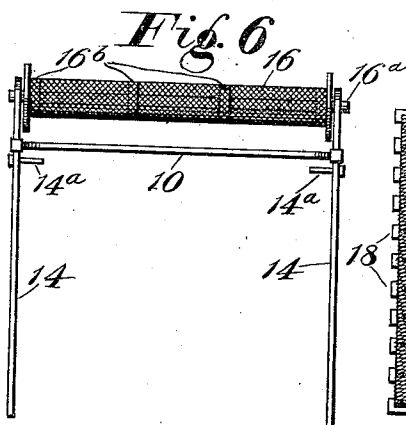
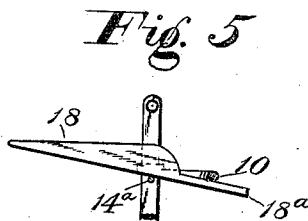
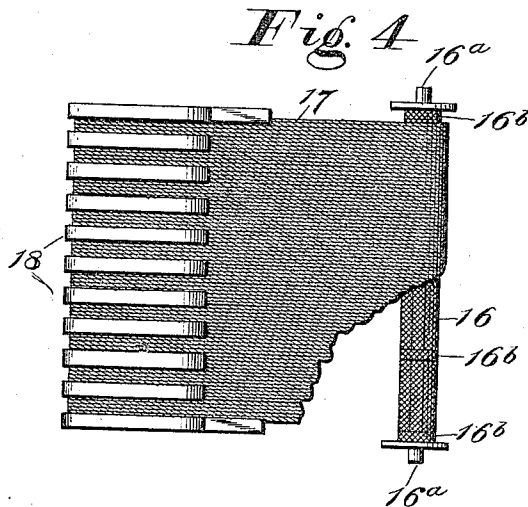
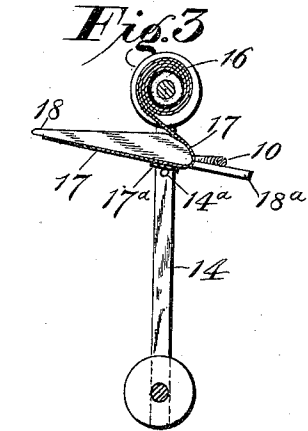
Inventor:
William H. Martin

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2 SHEETS—SHEET 2.



Witnesses

Julia C. Smith
E. E. Overholt

Fig. 8

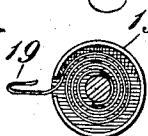
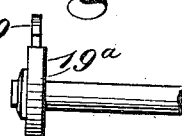


Fig. 9



Inventor

W. H. Martin
by
L. P. Leving
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM H. MARTIN, OF GEYSERVILLE, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
GEORGIA M. LEE, OF GEYSERVILLE, CALIFORNIA.

LIFE-SAVING DEVICE FOR STREET-CARS.

991,160.

Specification of Letters Patent.

Patented May 2, 1911.

Application filed October 8, 1909. Serial No. 521,781.

To all whom it may concern:

Be it known that I, WILLIAM H. MARTIN, a citizen of the United States, and a resident of Geyserville, in the county of Sonoma and State of California, have invented a new and Improved Life-Saving Device for Street-Cars, of which the following is a full and complete description.

My invention relates to safety devices for the front end of street cars, and is designed to take the place of the different kinds of fenders now in use, such as drop scoops, tilting scoops, wheel guards, drop aprons, etc.

My object is to provide a street car with means to prevent any person or object suddenly or unexpectedly run upon by the car, from being violently thrown to the ground and run over.

Another object is to provide a yielding buffer for first engaging any object whatsoever that may be run upon by the car.

Other objects will appear in the subjoined description.

The invention, among other things, comprises a drag suitably held normally in raised position at the front end of the car, and arranged to coöperate with a yielding buffer which, when it comes in contact with an obstruction, acts as a trigger to release the drag which is then dropped to the ground in front of the obstruction, while the yielding buffer, as the car advances, pushes the object forward and lifts it onto the drag.

The invention consists in certain novel parts and combinations, as will be hereinafter described and claimed, reference being had to the accompanying drawings, in which:

Figure 1 is a fragmentary side elevation of a street car provided with my improvements, the full lines showing the devices in lowered position, and the dotted lines in their raised position. Fig. 2 is a front elevation of a street car, showing my device as it appears thereon in its raised position, *i. e.* when out of action. Fig. 3 is a sectional view of the drag and canvas reef on its supporting frame when in raised position. Fig. 4 is a bottom view of the drag with part of the canvas reef torn away to show a part of the roller. Fig. 5 is a fragmentary skeleton view more clearly illustrating the manner of supporting the drag when in inoperative position. Fig. 6 is a view in elevation,

of the reef-supporting roller, and the drag-supporting portions adjacent thereto. Fig. 7 is a top view of the drag and its supporting roller with a part of the reef torn away. Fig. 8 is a plan view of the spring 19 in its casing, and Fig. 9 is a side elevation of the same.

The yielding buffer or trigger 2 carrying the roller 3 at its lower side, comprises an approximately rectangular frame 2^a filled in with screening or other light, and more or less yielding, material 2^b, as clearly illustrated in Fig. 2. This buffer 2 is pivotally supported by the pair of springs or brackets 1 secured to the corner posts at either side of the front end of the car, said springs being connected with the crossrod 2^c of the frame 2^a of the buffer, which arrangement permits the lower end of the buffer to be swung back and forth, preferably through an arc of approximately 45 degrees, as indicated in Fig. 1, when coming in contact with an obstruction. The buffer 2 is normally held in its forward position, as indicated in dotted lines in Fig. 1, so that when it strikes an obstruction it may swing backwardly to the position shown in full lines in the same figure.

The rock shaft 12 is suitably supported in a horizontal position at the front end of the car by the bearings 11 which are secured to the corner posts of the car above the springs 1. On the outer ends of the rock shaft 12 the grooved pulleys 13 are rigidly mounted, and the arms 14 are firmly secured to these pulleys to rotate therewith, and with the rock shaft 12. These arms 14 are connected to each other near their outer ends by the cross bar 10, and are adapted to swing upwardly into a vertical position, as shown in dotted lines in Fig. 1, which is their normal position when not in action; and when in action they are supported in a horizontal position by the stay chains 15, which hang slack when the arms 14 are in their vertical position. A horizontal roller 16 is mounted at the outer ends of these arms 14, and this roller carries a canvas reef 17 adapted to wind and unwind upon the roller, the inner end of the reef being suitably secured to the roller. The outer end of this reef is provided with a drag constructed of a number of slats 18, left free at their rear ends to permit them to move up or down, as occasion may require, to compensate for

any unevenness that may chance to be in the roadway.

The manner of attaching the reef to the slats is clearly illustrated in Fig. 7. In this figure and also in Fig. 3, it will be seen that there is a strap 17^a, preferably of metal, secured to the drag on the outside of the canvas, which strap holds the slats suitably spaced from each other.

The roller 16 comprises a central shaft 16^a on which are mounted four round wooden disks or wheels 16^b, and upon these wooden disks wire netting is wound to form the roller. This roller is clearly shown in Fig. 6, which figure also shows the pins or bolts 14^a carried by the arms 14 to form a support for the drag when in raised position.

The reef can be very conveniently secured to the screen roller 16, by means of sewing.

When the arms 14 drop to their horizontal position the weight of the drag will cause it to rapidly drop to the ground by gravity, unwinding the canvas reef as it falls. The length of the canvas reef is such as to permit the drag to move backwardly toward the car into the position indicated in Fig. 1, with the rear end of the drag in close proximity to the roller 3 at the lower end of the buffer.

The points at which the buffer 2 is secured to its supporting springs 1, may be considered as approximately the fulcrum points of the buffer. Centrally secured to the upper side of the buffer above its fulcrum points is the chain 4 which passes over the pulley 5, on the rock shaft 12, and has its lower end attached to the weights 6, which normally rest upon a projection of the platform of the car. The chain 4 is of such relative length that the weights 6 operate through it to pull the upper end of the buffer inwardly to cause the lower end to always occupy its forward position under normal conditions.

The tripping levers 7 are pivoted at their centers 7^a to the front end of the car, at either side of the weights 6. Each of these levers is pivoted at its inner end to one of said weights 6, and at its outer end to one of the vertical locking bars 8, which move up and down in the guides 9. From the construction shown it will be seen that when the buffer 2 is in its forward position, the weights 6 will have moved the locking bars up sufficiently for their extreme upper ends to engage the cross bar 10 of the arms 14, and thereby hold said arms locked in their vertical position, as shown in Fig. 2.

The chains 20 are secured at their upper ends to the grooved wheels 13 and are then passed down around the inner grooves of the double-grooved pulleys 21 which are secured to the bottom of the car, and thence to the springs 19, preferably located under-

neath the car, to which springs the other ends of said chains are secured. The springs 19 are provided with suitable shields 19^a. When the locking bars 8 are moved downwardly out of engagement with the rod 10 by the rearward movement of the buffer or trigger 2, and thereby release the arms 14, the springs 19, through these chains 20, will cause the arms 14 to swiftly descend to their horizontal position.

The arms 22 are pivoted at their rear ends to the bottom of the car, and at their forward ends carry a large horizontal roller 23, adapted when in its lowermost position to roll upon the car track, and through frictional contact with the roller 3 to rotate the same when said roller 3 is forced back into contact with it by meeting an obstruction on the track. The arms 22 are normally held up out of engagement with the track by the chains 24, whose upper ends are attached in the outer grooves of the pulleys 21, which are rotated by the chains 20 when the arms 14 are moved up and down.

The operation of my device is as follows;—Normally the parts are in the position shown in full lines in Fig. 2, and in dotted lines in Fig. 1. When the car runs upon an obstruction, the buffer or trigger 2 strikes it first, and is moved backward thereby to the position indicated in full lines in Fig. 1, as the car advances. This relative backward movement of the trigger 2 operates through the chain 4 to lift the weights 6, which in turn operate through the levers 7 to lower the locking bars 8 out of engagement with the cross bar 10 of the arms 14. This being done, the springs 19 through the chains 20 and the grooved wheels 13 to which they are connected, operate upon the rock shaft 12 to cause the arms 14 to swiftly descend to their horizontal position, said arms being suddenly stopped by the stay chains 15 when they reach this position. The momentum thus imparted to the drag, as well as its own weight, causes the drag to suddenly and rapidly unwind the canvas reef which supports said drag upon the roller 16, and to speedily drop on the track in front of the obstruction encountered. The drag remains practically stationary until the reef is entirely unwound, at which time the car has advanced sufficiently to bring the parts into the relative position indicated in full lines in Fig. 1, with the roller 3 of the buffer practically at the rear edge of the drag. In the meantime the rotation of the rock shaft 12 and the wheels 13 (which took place as the arms 14 descended) has, through the chains 20, rotated the pulleys 21, which have in turn, through the chains 24, dropped the roller 23 onto the track, and the advance movement of the car has moved the large roller 23 up

into contact with the roller 3, the result of which is that the rotation of the roller 3 on the track will, through frictional contact with the roller 3, cause the latter to rotate in the direction indicated by the arrow, (*i. e.* upwardly at its front side), which will keep an object from being drawn under the roller 3 while the buffer, as the car advances, is moving the object forward onto the drag.

10 When the car is stopped, the reef is wound by hand upon the roller 16; the arms 14 are then moved to their vertical position, and locked in that position by the upward movement of the bars 8, which takes place through the levers 7, when the return movement of the buffer to its normal forward position permits the weights 6 to descend by means of the chain 4, and when the parts are in this position the drag is turned upside down, and the projecting ends 18^a of the two outer slats are inserted under the cross-bar 10, with the under sides of said outer slats resting on the inwardly extending bolts 14^a. The bar 10 and the pins 14^a are so located relatively to each other that when the drag is held between them the projecting ends 18^a of the two outer slats of the drag point slightly downwardly, so that the drag will not be shaken from its position by the jarring and jolting of the car when in motion.

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

35 1. In safety devices for street cars, the combination with a car of a drag at the front end thereof, normally held in raised position, and adapted to be dropped upon the track in advance of an obstruction; a yielding buffer projecting in front of the car in position to strike the obstruction upon the near approach thereto of the car and designed to act as a trigger to trip the drag mechanism; said trigger buffer being provided at its lower side with a roller arranged to come into close proximity to the drag when the buffer is moved to its rearwardmost position by an encountered obstacle; and another roller held normally in inoperative position near the front end of the car, and adapted to drop to the track and be rotated thereupon and to form a stop for the first named roller when the trigger buffer is moved to its rearwardmost position, said second named roller being thus adapted by frictional contact with the buffer roller to impart thereto rotation in the opposite direction from that of the second named roller, thereby causing the first named roller to revolve in a direction tending to lift an encountered object onto the drag.

2. In safety devices for street cars, the combination with a car of a drag at the front end thereof, normally held in raised position, and adapted to be thrown upon the

track in advance of an obstruction; a trigger buffer near the front end of the car in position to first strike obstructions upon the near approach of the car thereto and to prevent them from passing under the car, said trigger buffer extending down near the ground and being pivotally secured near its top side to yielding brackets, and arranged to normally project forwardly at its lower side; and weights supported upon the front end of the car and connected by flexible means with the top side of said trigger buffer above its pivotal axis in a manner to draw the upper side of the trigger buffer toward the car to cause the lower side of the trigger buffer to project forwardly.

3. In safety devices for street cars, the combination with a car of drag supporting mechanism; locking bars for locking said mechanism in raised position; a trigger buffer in front of the car, in position to strike an obstruction upon the track, and pivotally secured to brackets at a point between the top and the bottom of the trigger buffer and arranged to swing forwardly and rearwardly on its pivots; weights supported at the front end of the car; a rotatable pulley between the weights and trigger buffer; flexible means connecting the upper side of the trigger buffer with said weights, whereby to cause the weights to normally swing the lower side of the trigger buffer forwardly and to be lifted from their support by the rearward movement of the lower side of the trigger buffer; and levers fulcrumed between their ends and pivotally connected at one end to said weights and at the other end to said locking bars whereby the upward movement of the weights, caused by the rearward movement of the trigger buffer operates to unlock said drag supporting mechanism.

4. In safety devices for street cars, the combination with a car of a rock shaft secured to the front end thereof; grooved pulleys rigidly secured to said shaft; parallel arms rigidly secured to said pulleys to rotate therewith on the rock shaft, said arms being adapted to swing upwardly into a vertical position and also downwardly; stay chains for supporting the arms when moved downwardly into their horizontal position; a roller supported at the outer ends of said arms; a drag; a flexible connection securing said drag to said roller; said drag being designed to be dropped upon the track in advance of an obstruction; means for locking the parallel arms with the parts supported thereby in raised position; and means carried in advance of the car to contact with an obstruction upon the track, and to automatically unlock said drag supporting mechanism upon such contact.

5. In safety devices for street cars, the combination with a drag, of a drag support

for holding the drag in raised position, said support comprising a member adapted to engage the under side of the drag toward one end thereof, and a second member adapted to engage the top side of the same end of the drag at a point nearer its extremity than the point engaged by said first named member, said engaging members being arranged to hold the drag in a position with the end of the drag engaged by the supports inclined slightly downwardly, whereby to prevent the drag from being jarred from its raised position by the jolting of the car.

6. In safety devices for street cars, the combination with a drag, of rock-arms upon which said drag is supported, said arms being adapted to move upwardly to hold the drag in its normal horizontal position, and to swing down into an approximately horizontal position to release the drag and to drop it to its lowered position; said rock arms having supporting means for the drag, comprising a member adapted to engage the under side of the drag toward the inner end thereof, and a second member adapted to engage the top side of the same end of the drag at a point still nearer its extremity, said engaging members being arranged to hold said drag approximately at right angles to said supporting rock-arms, whereby when the rock arms are in their vertical position, the drag will be held in a position

slightly inclined thereto, and when the rock arms drop to their horizontal position the drag will drop by gravity from between its two supporting members carried on said rock arms.

7. In safety devices for street cars, the combination of a drag; a roller; a flexible reef secured at one end to the drag and at the other end to the roller, and adapted to be wound upon the roller; a support for holding said parts normally in raised position, said support comprising rock arms in which said roller is mounted, said arms having projections for supporting the drag to prevent the weight of the drag from unwinding the reef from the roller, said projections being adapted to engage the under side of the drag toward one end thereof; and means adapted to engage the top side of the same end of the drag at a point nearer its extremity than the point engaged by said projections, to prevent said end of the drag from rocking upwardly, said projections upon which the drag is supported and said means which prevents the engaged end of the drag from rocking upwardly being arranged to hold the drag in a position slightly inclined to the horizontal.

WILLIAM H. MARTIN.

Witnesses:

DAVID L. WINDER,
R. D. BARTON.