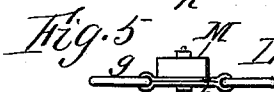
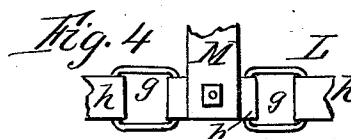
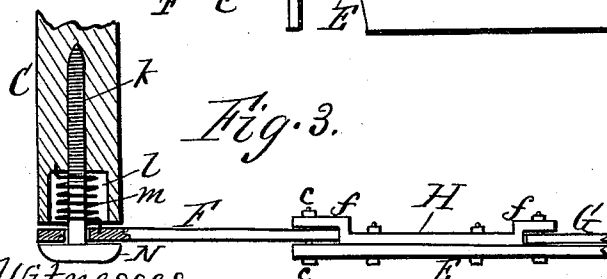
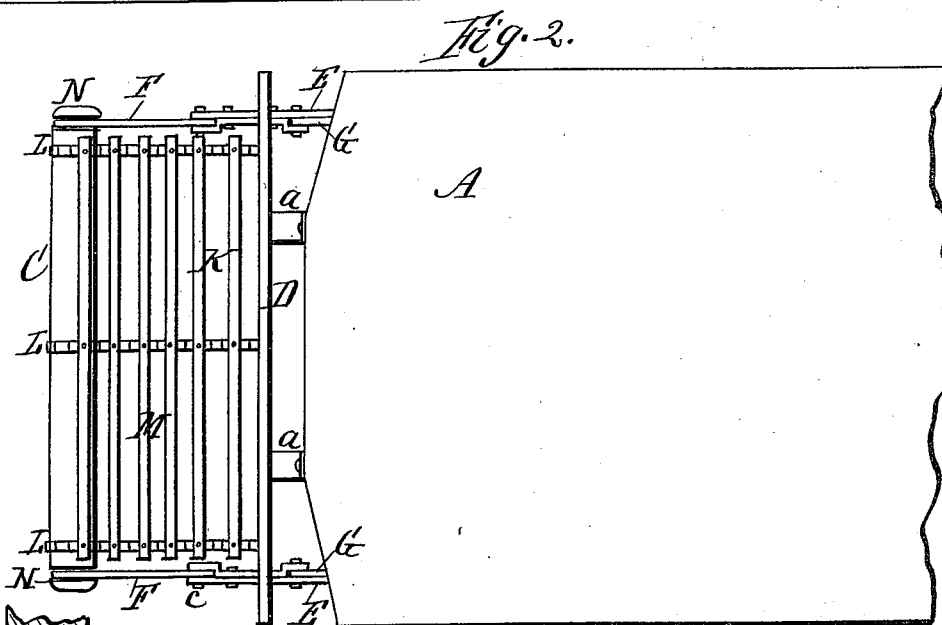
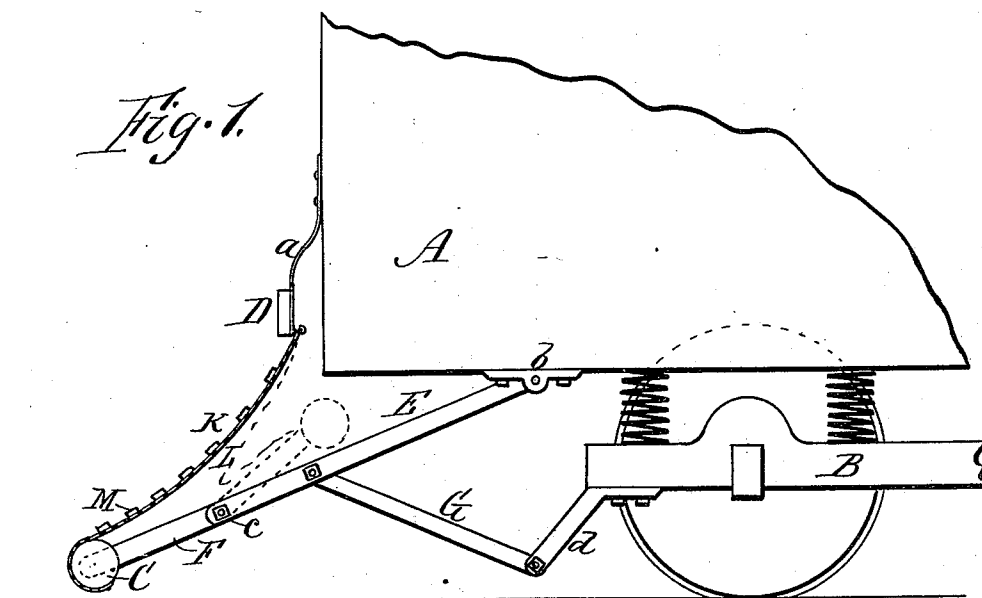


(No Model.)

S. NORTON.
SAFETY GUARD FOR STREET CARS.

No. 519,046.

Patented May 1, 1894.



Witnesses.
Chas. O. O'Brien,
H. S. Hutchinson.

Inventor.
Stephen Norton,
per R. L. Osgood, Atty

UNITED STATES PATENT OFFICE.

STEPHEN NORTON, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF
TO WILLIAM H. RICE, OF SAME PLACE.

SAFETY-GUARD FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 519,046, dated May 1, 1894.

Application filed August 7, 1893. Serial No. 482,625. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN NORTON, of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Safety-Guards for Street-Cars; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this application.

My improvement relates to that class of street-car fenders having a flexible and yielding covering in front of the car to catch and hold any object with which the car comes in collision.

The invention consists in the construction and arrangement of parts hereinafter described and embodied in the claims.

In the drawings, Figure 1 is a side elevation of one end of a car provided with my improvement. Fig. 2 is plan view of the same. Fig. 3 is a plan view showing one end of the roller and the lever-work with which it is connected, the end of the roller being shown in section. Figs. 4 and 5 are plan and elevational views of a portion of one of the chains.

A indicates a street car of ordinary form, and B the truck.

C is a roller that runs in advance of the car and close to the track.

D is a cross-bar attached to springs *a a* secured to the front of the car, said bar being padded or covered with some soft material, and serving as a fender to break the shock in case a person is thrown upon the guard.

E E are two side bars forming a part of the frame that supports the roller. Said bars are pivoted at *b b* to the bottom of the car so as to have free motion.

F F are supplementary bars, pivoted at *c c* to the ends of the side bars, and carrying at their outer ends the roller C. By this arrangement the supplementary bars can be turned over and back, as indicated by the dotted lines in Fig. 1. One object of this is to reduce the length of the attachment in coupling trailers, or for storage in buildings, or in turning short curves.

G G are braces pivoted at one end to arms *d d* of the truck B, and at the other to the side bars E E. These braces serve as fulcrums to the side bars, so that as the front end of the

car vibrates up and down the roller C remains at substantially the same elevation above the track. In other words, as the end of the car rises the tendency is to throw the roller downward, but this action is counteracted by the rising of the outer ends of the braces forming the fulcrums. As the end of the car falls the reverse action takes place. The roller, therefore, rides in substantially the same horizontal plane at all times, notwithstanding the vibrations of the car. In addition to these advantages the side bars and braces diverge at their rear ends in V form, thereby forming a strong support to resist the thrust of the attachment in striking an object on the track. To facilitate the attachment of the braces G G and supplementary bars F F, to the side bars E E, stay-pieces H H are attached inside the side bars, said stay pieces having offset ends *f f* which receive the ends of the braces and supplementary bars. The ends of the bars are jointed by ordinary bolts.

K is the flexible covering in the rear of the roller. The upper end is attached to the spring bar D in front of the car, or to the car itself, and the lower end to the roller C, around which latter it is partially wound, as shown in Fig. 1. The covering consists of chains L L and a series of cross slats M M attached to the chains, said cross slats, as well as the roller, being padded or covered with some soft material. The chains preferably consist of alternate open links *g g* and closed links *h h*, the latter made of hoop or band iron bent double, the slats being secured to the closed links by means of bolts or rivets.

The roller C is provided with some spring attachment which applies tension and tends to turn it forward so as to strengthen the flexible covering. As shown in the drawings a padded head N rests outside the bar that holds the roller, said head being provided with a screw *k* that passes through a hole of the bar and enters the end of the roller. This screw forms the axis of the roller. The roller is bored out at the end, making a cavity *l*, in which is fitted a torsion spring *m*, resting around the screw—one end being attached to the roller and the other to the bar as shown in Fig. 3.

In case the attachment strikes a person on the track he is tripped up and thrown over the roller on to the flexible covering, and in some cases against the spring bar D in front of the car. The weight causes the flexible covering to draw on the roller and unwind and to sag in bag form, thereby forming a receptacle in which the person is securely held, the roller retaining its place and forming a stop to prevent the person falling out. By the attachment of the covering at one end to the spring roller and at the other to the spring bar, it is rendered elastic at both ends, and greatly relieves the shock. When the weight is removed the elastic action of the roller causes it to take up the slack again.

If desired the supplementary bars F which hold the roller may be turned back by some attachment extending to the platform and under control of the motorman.

Having described my invention I do not claim broadly an attachment provided with a roller in advance of the car. Neither do I claim broadly a compensating lever-work connected with a guard in advance of the car for equalizing its elevation.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a safety guard for street cars, the combination, with the car, of the springs *a a* attached to the end of the car, and the cross bar D attached to the springs, as and for the purpose specified.

2. The combination, with the car, of a supporting frame at the end of the car, a roller resting in the frame provided with a spring which tends to turn it forward, and a flexible covering attached to and partially wound on the roller, its outer end being attached to the car, for the purpose specified.

3. The combination, with the car, of a sup-

porting frame at the end of the car, a roller resting in the frame provided with a spring which tends to turn it forward, a spring bar attached to the end of the car, and a flexible covering attached to and partially wound on the roller at one end and attached to the spring bar at the other, as and for the purpose specified.

4. The combination, with the roller C provided with the cavity *l*, and with the flexible covering K attached to and winding on said roller, of the head N provided with the screw *l* entering the end of the roller, and the spring *m* encircling the screw, attached at one end to the roller and at the other to the bar that supports the roller, as and for the purpose specified.

5. The combination, with a street car, of the side bars E E pivoted to the bottom of the car, the supplementary bars F F pivoted to the side bars, the roller C, supported by the supplementary bars, and the braces G G pivoted at one end to the truck and at the other to the side bars, as and for the purpose specified.

6. The combination, with a street car, of the side bars E E pivoted to the car, the braces G G pivoted at one end to the truck and at the other to the side bars, the supplementary bars F F pivoted to the side bars, the spring roller C resting in the supplementary bars, and the flexible covering K attached at one end to the roller and at the other to the car, as and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

STEPHEN NORTON.

Witnesses:

R. F. OSGOOD,
WM. H. BAILEY.