No. 653,930. Patented July 17, 1900.

J. VON HOLT.

FENDER FOR TRAMWAY OR LIKE VEHICLES.

(Application filed Oct. 30, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1

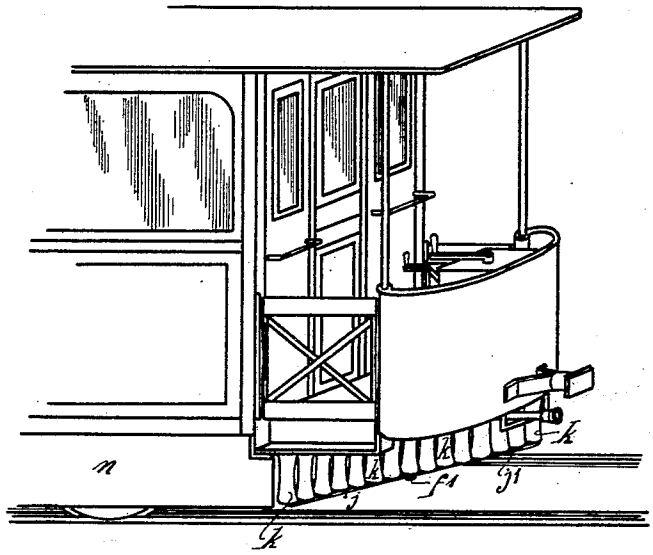
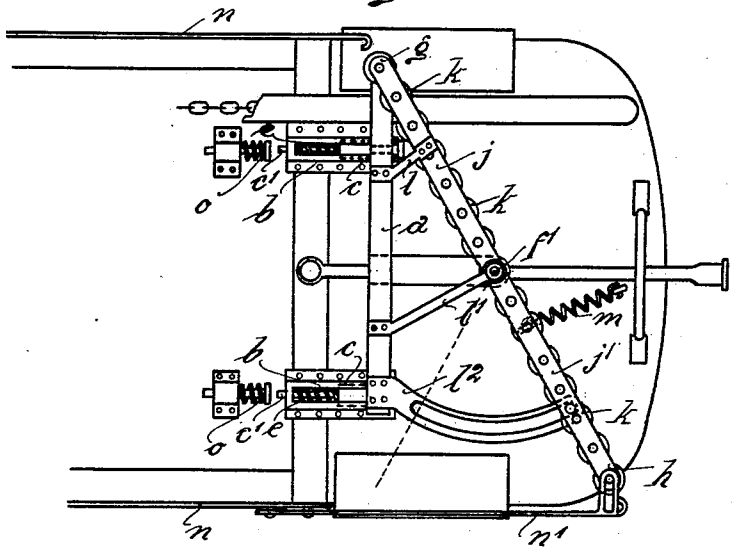


Fig. 2



Witnesses:

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Inventor.

Johann von Holt
by F. Singer
Att'y.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 3

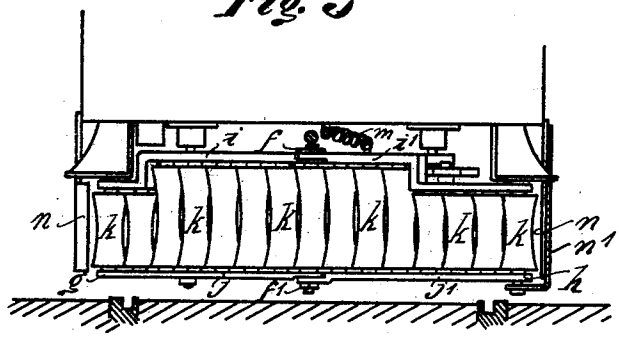


Fig. 5

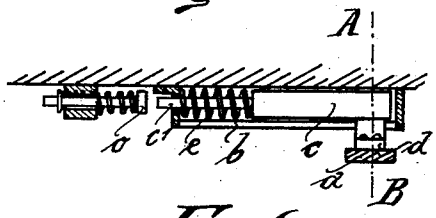


Fig. 4

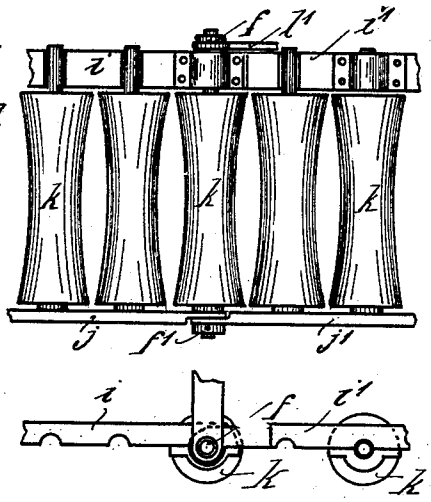


Fig. 6

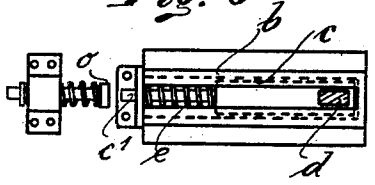
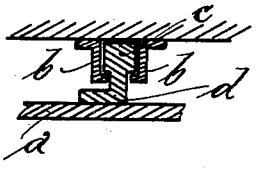


Fig. 7

Fig. 8



Witnesses:

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by P. Singer.

Att'y.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHANN VON HOLT, OF HAMBURG, GERMANY.

FENDER FOR TRAMWAY OR LIKE VEHICLES.

SPECIFICATION forming part of Letters Patent No. 653,930, dated July 17, 1900.

Application filed October 30, 1899. Serial No. 735,195. (No model.)

To all whom it may concern:

Be it known that I, JOHANN VON HOLT, laborer, a subject of the German Emperor, residing at 1 Jacobstrasse 11, Hamburg, in the German Empire, have invented new and useful Improvements in Fenders for Tramway or Like Vehicles, (for which I have made applications for patents in Germany, dated September 30, 1899; in France, No. 281,154, dated October 4, 1899; in Austria, dated October 2, 1899, and in Great Britain, No. 20,109, dated October 6, 1899,) of which the following is a specification.

This invention relates to a fender for street, tram, or railway vehicles for preventing persons being run over.

The arrangement consists, broadly, of an elastic frame arranged in front of the wheels and fitted with a number of vertical rollers. The frame is arranged at an incline with the longitudinal axis of the vehicle in such a manner that normally a person caught by the fender is pushed toward that side where there is no danger from vehicles coming in an opposite direction.

My invention will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a portion of a tram-car, showing the improved fender applied thereto. Fig. 2 is a reversed plan of Fig. 1. Fig. 3 is a front elevation of the fender. Fig. 4 shows the rollers and their mountings drawn to a larger scale. Fig. 5 is a side elevation of the sliding supports for the fender-frame. Fig. 6 is a reversed plan of Fig. 5. Fig. 7 shows the top bar of the fender. Fig. 8 is a sectional view on the line A B, Fig. 5.

Below the ordinary platform of the tram-vehicle, upon which the driver stands, a bar a is arranged at right angles to the longitudinal axis of the car, and such bar is adapted to move forward and rearward, owing to the action of slotted bearings b, having movable sliding blocks c, which by means of bracket-pieces d support the bar a. The blocks c are constantly urged forward by means of strong helical springs e, which normally hold them in such forward position.

To the bar a is connected a vertically-arranged frame adapted to reach down to the ground as far as is practical. The said frame comprises the bars $i\,i'$ and $j\,j'$, the portions of which are respectively secured together by hinge-joints $f f'$, the purpose of which will be hereinafter explained. The articulation divides the frame into the parts $g\,f$ and $f\,h$. The upper bar $i\,i'$ of the frame is bent at parts, so as to adapt itself to the car and various apparatus carried below the floor, such as the brake, the stops, and so on, while the lower bar j is straight. The rollers k, mounted between the bars $i\,i'$ and $j\,j'$, are made of soft rubber and of a reduced diameter at the middle, somewhat as shown. The frame furnished with the rollers is mounted at a sharp angle with its supporting-bar a, to which it is connected by means of arms $l\,l'\,l^2$. The arm l carries the joint f, and the arm l^2 forms a guide in which the frame portion $f\,h$ can slide, this latter being normally held in its forward position by the pull of a helical spring m.

If now a person owing to an accident is caught by the fender, it is in most cases in the middle of the apparatus that he is caught. The form of the rollers is such as to adapt themselves somewhat to the rounded form of the body, and therefore obviously as the car has a certain momentum the tendency of the rollers is to push the person onward and at the same time sidewise outside the rails toward the receding portion g by reason of the inclined position of the frame. This action is facilitated by the adoption of rotary rollers, whereby friction is obviated between the person and the protecting fender. If the person, however, falls in front of the portion $f\,h$, the force of the spring is overcome and the said portion assumes a position, as is indicated by the dotted line in Fig. 2, and the person is then pushed toward this side, as this is the nearest side.

The wheels are advantageously cased in by a side plate or board n, so as to prevent the person ejected by the fender from coming within reach of the wheels of the tram.

The forward movable end of the fender is connected with the side-boards by an intermediary part n', which is guided in the side-board n and which can move rearward suffi-

ciently to admit of the motion of the fender portion *f h*, and thus all danger from the wheels is obviated.

In a trailing-car the fender may be constructed without the hinge-joint, as accidents can here only occur on entering or descending the car and access to the car takes place from one side only.

In order to reduce the shock by contact more than is already effected by the soft-rubber rollers *k*, I make the entire structure elastic—*i. e.*, to yield by enabling the blocks carrying the bar *a* to slide in the slotted bearings *b* and compress the springs *e*. Thus the shock is transmitted to the springs *e*, and in this manner is lessened upon the person.

In Figs. 2, 5, and 6 of the drawings it is shown how the projection *c'* of the sliding block *c* can be used to form an electric contact with a spring-controlled stud *o*, which latter then switches off the current and at the same time starts an electric brake.

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

1. In a fender, the combination with a suitable support, of a frame carrying rollers, having one portion rigid and its other portion hinged, substantially in the manner described.

2. In a fender, the combination of a yieldingly-supported bar, a frame carrying rollers, having one portion rigid and its other portion hinged, substantially in the manner described.

3. In a fender, the combination of a bar yieldingly supported at right angles with the longitudinal axis of a car or vehicle, a frame set obliquely to said axis and having one part rigidly secured to said bar and its other part hinged to said rigid part, said hinged part provided with guides and a spring, as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHANN VON HOLT.

Witnesses:
ERNEST H. L. MUMMENHOFF,
OTTO W. HELLMRICH.