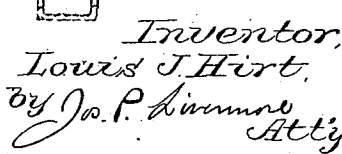


(No Model.)

L. J. HIRT.
FENDER FOR STREET RAILWAY CARS.

No. 495,972.

Patented Apr. 25, 1893.



UNITED STATES PATENT OFFICE.

LOUIS J. HIRT, OF BOSTON, MASSACHUSETTS.

FENDER FOR STREET-RAILWAY CARS.

SPECIFICATION forming part of Letters Patent No. 495,972, dated April 25, 1893.

Application filed November 28, 1892. Serial No. 453,382. (No model.)

To all whom it may concern:

Be it known that I, LOUIS J. HIRT, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Fenders for Street-Railway Cars, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is embodied in a fender for street railway cars and relates mainly to the mechanism for actuating a movable fender which is normally supported a sufficient distance above the surface of the road bed to run free of ordinary obstructions, snow, &c., thereon, but which is brought down into close proximity to the road bed when required as a guard in front of the wheels. The guard or fender is supported on arms pivoted to suitable brackets or supports on the car body, or truck frame of the car (preferably the latter) at a point above and in advance of the guard which thus moves forward and downward into working position and rearward and upward when it is raised above the road bed as is the case when there is no emergency requiring its use. The guard operating arms are provided with links for actuating said arms to raise and lower the guard, said links being in turn operated by cams upon a cam-shaft connected with the brake mechanism in such manner that when the brakes are applied to stop the car the guard will be thrown down into working position.

Figure 1 is a side elevation of a portion of a car body and truck provided with a lift guard or fender and actuating mechanism therefor embodying this invention, the guard being shown as raised so as not to interfere with the free running of the car; Fig. 2 a side elevation showing a portion of the mechanism represented in Fig. 1, on a larger scale, and with the guard down in working position near the road bed; Fig. 3 a detail showing one of the actuating cams and its operating mechanism in side elevation; Fig. 4 a detail of the connecting link by which the actuating cam is caused to operate the fender; Fig. 5 a detail showing the fender actuating mechanism

in elevation as seen from the end of the car, and Fig. 6 a modification to be referred to.

The lift guard or fender forming the subject of this invention may be applied to street cars of any suitable or usual construction, being shown in this instance as applied to a car, a portion of the sill or frame work of which is represented at A Fig. 1, the said body being supported on the wheels at B, through the intervention of a truck frame C itself supported on the wheel journals and sustaining the car body through the intervention of springs D.

The car is preferably provided with a horizontal projecting fender or guard E extending beyond the platform which will in most cases prevent persons from being thrown beneath the wheels, but in case a person should be thrown down by the fender E or otherwise, so that the said fender and car body passes over the person, there is danger of the person being crushed by the wheels or running gear of the car, and it is not practicable to have a fender of the kind shown at E close enough to the surface of the road bed to wholly prevent the possibility of a person passing beneath the fender owing to variations in the height of the road bed and the vertical vibrations of the car body on its spring, and consequently the fender E should be high enough to pass over a person without crushing or seriously injuring him.

In order to protect a person over whom the fender E may have passed, from being crushed by the wheels, the car is provided with a second fender or life guard a located as near the wheels as possible the said fender being composed of a bar or beam extending across the space between the wheels B and supported upon arms a^2 pivoted at a^3 in brackets b preferably fastened to the truck frame C so as not to partake of the vertical vibrations of the car body on its springs.

The arms a^2 and devices co-operating therewith are the same at both sides of the car truck, and consequently the devices at one side only of the car need be described and shown, it being understood that they are duplicated at the other side.

The pivotal point a^3 about which the fender

a turns is preferably above and in advance of the fender as shown and the movement of the fender about the said pivot raises and lowers the same so that the fender may be held a
 5 sufficient distance above the road surface as shown in Fig. 1, to avoid interference with any material on the road surface which might impede the movement of the car and so that it may be moved down close to the road surface as shown in Fig. 2, in order to prevent
 10 possibility of a person fallen on the road surface being passed over by or crushed beneath the said guard, which would either throw the person off from the road bed or slide him along
 15 the road bed so that in either case the person cannot be crushed beneath the wheels or running gear of the car.

In order to provide for the lowering of the fender into working position when required,
 20 it is operated by the brake actuating mechanism of the car so that the attendant in the act of applying the brake to stop the car will also cause the fender to be lowered and retained in its lower or working position shown
 25 in Fig. 2 until the car comes to rest.

The connecting mechanism between the brake actuating mechanism and the fender a is shown in this instance as comprising links c each connected at c^2 with the corresponding
 30 arm of the fender and provided with a slot c^3 , which engages with a rock shaft d and thus guides the link in its up and down movement, by which the fender is raised and lowered.

The rock shaft d is mounted on bearings d^2
 35 on the truck frame C the said rock shaft extending across from side to side of the truck frame and being provided near each end with a cam e that stands between cam rolls c^5 on the link c and is so shaped that by the partial rotation of said rock shaft the said cams
 40 will move the said links longitudinally up or down to raise or lower the fender. The said rock shaft is turned at the proper times by means of an arm f fixed to said shaft and connected by a chain or other suitable connector
 45 g with the brake-rod h or chain h^2 by which the brake-rod is actuated, the said chain h^2 being actuated by the usual windlass or brake shaft h^3 at the front of the platform of the car.
 50 Thus the pulling of the chain h^2 by rotating the brake shaft to apply the brakes also pulls the chain g which causes the arm f to swing from the position shown in Fig. 1 toward that shown in Fig. 2, thus turning the rock shaft and the
 55 cams e thereon, so that the throw of the cam is withdrawn from the upper stud and acts upon the lower stud c^5 on the link, forcing the said link downward and thus depressing the fender a .

The cams e have a concentric part so that after they have thrown the links c in one or the other direction the said cams may continue their movement without producing further movement of the fender, which will however, remain substantially locked by the concentric part of the cam in its working position.

Thus it is possible to set up the brakes very hard in case of emergency without interfering with the proper action of the fender.

In order to raise the fender when the brakes
 70 are not applied and the car is running freely, the rock shaft is provided with a counterweight w which as soon as the chain g is slackened will turn the rock shaft and cams so that the throw of the latter will act upon
 75 the upper cam studs of the links and thus raise the same and the fender to the position shown in Fig. 1.

It is obvious that the construction of the connecting mechanism between the movable
 80 fender and the brake actuating mechanism can be varied considerably while producing substantially the same effect and being a substantial equivalent for the mechanism herein specifically described, it being essential only
 85 that the fender is thrown into working position close to the road bed in the act of applying the brakes and that such operation should not interfere with the application of the brakes with any power that may be desired, and it is also obvious that the rock
 90 shaft and connecting mechanism between the same and the fender might be operated otherwise than by the brake mechanism and that the invention, so far as the said mechanism is concerned, is not limited to the construction in which it is combined with and actuated by the brake mechanism of the car.

In the modification shown in Fig. 6, the link c is omitted and the actuating rock shaft
 100 is pivoted below the fender and the cam engages directly with the fender supporting arm a^2 and a loop or bracket a^5 that is connected therewith, the operation being substantially the same as in the construction previously described.

In some cases it is desirable to provide the fender with a counterbalance weight as shown at w^2 , Fig. 6, as well as the actuating rock shaft.

I claim—

1. The combination of the fender and its pivoted supporting arms with the actuating rock-shaft and cams thereon cooperating with the said fender to raise and lower the same,
 115 substantially as described.

2. The combination with the brake actuating mechanism of the pivotally supported fender, a counterweighted rock-shaft provided with cams for actuating said fender,
 120 and the actuating arm connected with said rock shaft and with the brake actuating mechanism, substantially as and for the purpose described.

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

LOUIS J. HIRT.

Witnesses:

JOS. P. LIVERMORE,
 M. E. HILL.