

(No Model.)

F. P. H. LOFTIS.
SAFETY GUARD FOR CARS.

No. 299,234.

Patented May 27, 1884.

FIG. 2.

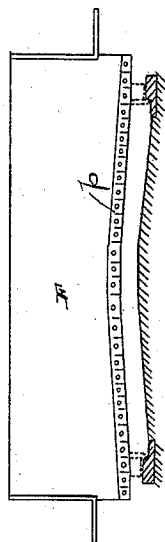
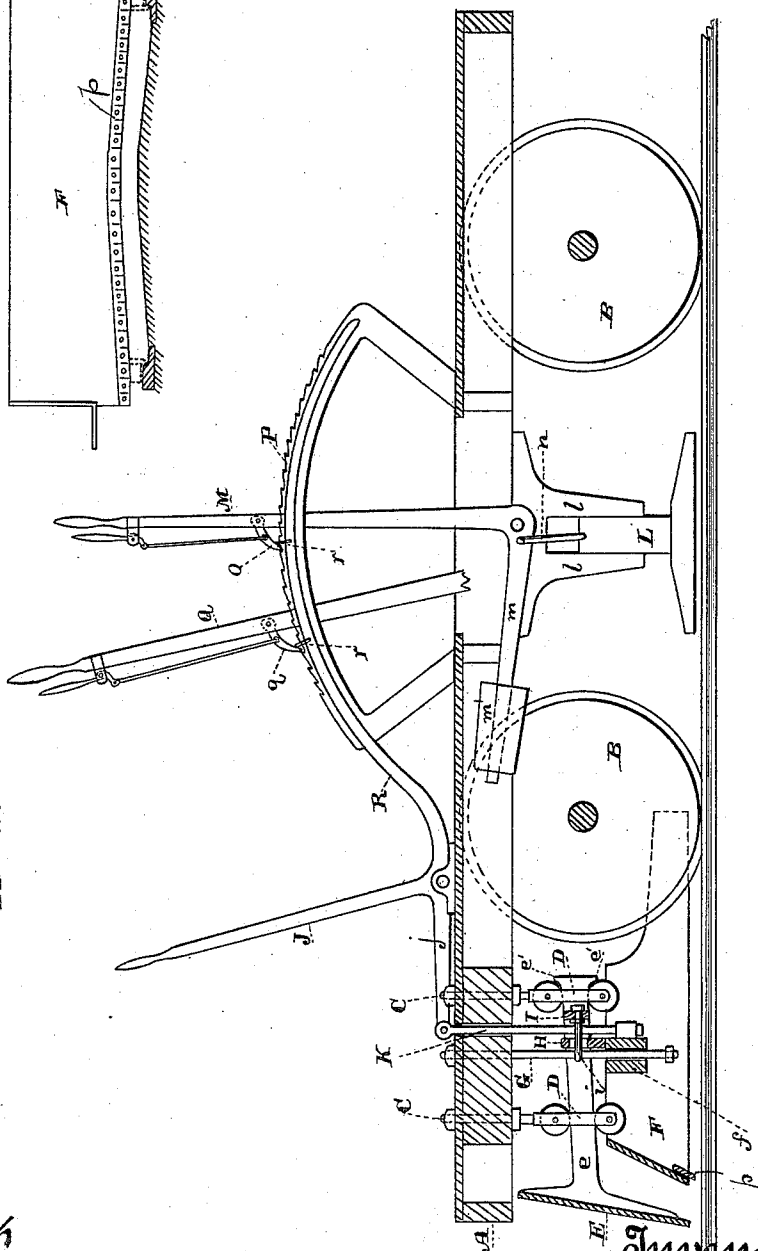


FIG. 1.



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UNITED STATES PATENT OFFICE.

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SAFETY-GUARD FOR CARS.

SPECIFICATION forming part of Letters Patent No. 299,234, dated May 27, 1884.

Application filed November 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, FRANK P. H. LOFTIS, of the city and county of San Francisco, and State of California, have invented an Improvement in Safety-Guards for Cars; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a new and useful safety-guard or fender for cars, the object of which is to avert accident and prevent injury to persons knocked down by the car and liable to get under the wheels.

My invention consists in a vertically-adjustable guard or shield suspended under the forward end of the car, and in a sliding guard in front of it, and adapted, when struck, to move back, and thereby trip the suspended shield, which drops down upon and incloses completely the space in front of the wheels, so that the obstructing body cannot get under them.

It consists, further, when applied to cable-cars, of a connection between this adjustable shield and the brake and grip-lever, whereby when the former drops the latter are thrown out of engagement with their racks, in order to apply the brakes and release the grip automatically and instantaneously, all of which I shall hereinafter fully explain, reference being made to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section of a dummy and my safety-guard. Fig. 2 is a front view of shield F.

My invention, though applicable to any kind of car or heavy moving body, I prefer to show in connection with what is usually known as the "dummy" of a cable-car, because I can illustrate fully my complete invention.

A is the frame, and B the wheels, of a dummy. In the portion of the frame in front of the forward wheels are fixed depending bolts C, in the lower ends of which are roller-guides D.

E is a guard-plate, either under the forward end of the car, as here shown, or at a point farther forward. It has backwardly-extending arms e, which pass between the roller-guides D, whereby the guard is held above the track or road-bed a short distance, sufficient to prevent it from being injured by reason of

changes of grade or small obstacles in the road.

The rearmost of the roller-guides are higher than the foremost, so that the arms of the guard slope downward to the front, for the purpose of allowing said guard to move forward by gravity to its proper position, and remain there, being limited by stops e' on the rear ends of the arms.

This guard may be made of any suitable material—wood or sheet-iron.

F is the shield. It consists of a frame having a backwardly-sloping front and sides, which pass back on the outer sides of the front wheels, which are thus inclosed in front. The sides are braced by a cross-bar, f, through which bolts or rods G, secured to the car-frame above, loosely pass. The shield is thereby suspended by said rods, and yet may have a vertical play upon them as guides. From this cross-bar f extends upwardly a short arm, H, having a hole or slot in its upper end.

Between the arms e of guard E is a cross-bar, I, from which a pin, i, projects forwardly, and is adapted to enter the hole or slot in arm H, and thus hold the shield up as long as the guard E is at its foremost limit; but when the guard is moved back its pin i withdraws itself from the arm H, and the shield drops down to the road-beds, its lower edge (which is made to conform suitably) resting upon the road-bed in front of and on the outer sides of the front wheels, thereby inclosing them. The pin i is made adjustable by being made as a bolt with nuts on each side, so that the pin may be drawn out more or less to release the arm, as required.

Upon the frame of the dummy is a lever, J, having a forwardly-extending arm, j, which is connected with a bar or rod, K, the lower end of which is connected with the shield.

By pulling back this lever the shield is raised, and the front guard, when released by the removal of the obstruction, runs forward again, to cause its pin i to engage with the arm H, and so suspend the shield.

The brakes L, I have here shown are vertically-moving ones, playing in guides l, and adapted to impinge upon the tracks. I operate them by a lever, M, having a forwardly-

projecting arm, *m*, carrying a weight, *m'*. With this arm the brakes are connected by a rod, *n*, so that by the movement of the lever the brakes are put down or raised up, the weight having a tendency to throw them down when the lever is freed. I might use a spring in place of the weight to accomplish the result. The lever *M* has a pawl, *o*, which engages with a rack, *P*, whereby the lever is held and the brakes kept in a raised position.

Q is the grip-lever, having a pawl, *q*, engaging with rack *P*. I have not shown the grip, as that is no part of my invention, and many forms are well known. It is sufficient to say that by the operation of the lever *Q* the gripping device is operated to seize or release the traveling cable in the underground tube or tunnel from which the car derives its motion.

Extending backwardly from the lever *J* is an arm, *R*, which conforms to the curve of the rack *P* and lies beside it. It has side pins, *r*, which project under the pawls *o q* of the brake and grip levers. Now, when the shield below is tripped, the lever *J* is thrown forward, its rear arm, *R*, being thereby thrown up. The pins *r* of said arm raise the pawls *o q* and release their levers. The weight *m'* throws the brakes down and the grip releases the cable, because it was only held by reason of the engagement and fixed position of the lever *Q*.

The operation of these devices is as follows: The dummy advances with its grip on the cable, its brakes up, its outer guard in its forward position, and its shield suspended by its arms. By some accident an obstructing body is encountered and knocked down. The guard *E* strikes it and is forced back, tripping the shield, which immediately drops to cover the road-bed and prevent the body from getting under the wheels. At the same time the dropping of the shield releases the grip and puts on the brakes, so that the dummy is stopped in the shortest possible time.

These devices obviate several difficulties which are experienced in the use of other safety-guards. Those which are to be attached to the car-body are subject to the springs, and thus do not travel at a uniform distance from the road-bed. Those which are attached to the axles, while traveling steadily, cannot be brought close enough to the road-bed to avoid accidents, because a single inequality would be liable to injure them; but with my device the guards may be attached to the car-body and raised as high as desirable, for neither absolute steadiness of motion in travel nor proximity to the ground is necessary, because the shield is not necessary until it has to drop, when it covers the road-bed and rails and guards the wheels.

This shield may be made of wood or sheet-iron, and its lower edge is to have a fringe, *p*, of some elastic material for a cushion.

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

1. A safety-guard or fender for cars, con-

sisting of a shield suspended under the car, and adapted, when dropped, to rest on the road-bed and tracks, inclosing the space in front of the forward wheels, and a tripping mechanism, operated by the impact or contact of the obstructing body, to trip the shield to allow it to fall, substantially as herein described.

2. A safety-guard or fender for cars, consisting of a shield having a front and sides, suspended under the car, and adapted, when dropped, to rest its lower edge on the road-bed and tracks, inclosing the space in front and on each side of the forward wheels, and a means, operated by the impact or contact of the obstructing body, to trip the shield to allow it to fall, substantially as herein described.

3. A safety-guard or fender for cars, consisting of a shield suspended under the car, and adapted, when dropped, to rest its lower edge on the road-bed and tracks, inclosing the space in front of the forward wheels, a means, operated by the impact or contact of the obstructing body, to trip the shield to allow it to fall, and a mechanism, operated by the falling shield, to apply the brakes to check the car, substantially as herein described.

4. A safety-guard or fender for cars, consisting of a shield suspended under the car, and adapted, when dropped, to rest its lower edge on the road-bed and tracks, inclosing the space in front of the forward wheels, a means, operated by the impact or contact of the obstructing body, to trip the shield to allow it to fall, and a mechanism, operated by the falling shield, to apply the brakes to check the car, and to release the gripping device by which, through the traveling cable, the car derives its motion, substantially as herein described.

5. The outer or forward guard, *E*, mounted under or in front of the car, and having backwardly-extending arms *e*, passing through roller-guides *D*, by which it is suspended, and adapted to be forced back by an obstructing body, in combination with the shield *F* under the car and between the guard *E* and the forward wheels, and a trip-connection between said shield and the arms of the guard *E*, whereby said shield is suspended above the road-bed and dropped to rest its lower edge on the road-bed and tracks when the guard *E* is forced back, substantially as herein described.

6. The guard *E*, having arms *e*, cross-bar *I*, and adjustable pin *i*, and the roller-guides *D*, in which the arms are fitted and adapted to move, the rear guides being higher than the forward ones, to permit the guard to move forward to position by gravitation, in combination with the shield *F*, having cross-bar *f* and slotted arm *H*, with which the pin *i* engages to suspend the shield, and from which it withdraws to drop it when the guard is forced back, substantially as herein described.

7. The guard *E*, having arms *e*, cross-bar *I*, and adjustable pin *i*, and the roller-guides *D*, arranged as shown, to support the arms and provide for its movement, in combination with

the shield F, having a cross-bar, *f*, guided on rods G, a slotted arm, H, for engagement with the pin, and the means for raising the shield after being dropped, consisting of the lever J, arm *j*, and connecting-bar K, substantially as herein described.

8. In a safety-guard for cars, the sliding trip-guard E and the drop-shield F, arranged to operate as shown and described, and the lever J, with its arm *j*, and connecting-rod K, in combination with vertically-moving brakes L, the lever M, having weighted arm *m*, the rod *n*, the rack P, and pawl *o* on the lever M, and the long arm R of lever J, having a side pin, *r*, under the pawl *o*, substantially as herein described.

9. In a safety-guard for cars, the sliding trip-guard E and the drop-shield F, arranged to operate as shown and described, and the lever J, with its arm *j*, and connecting bar or rod K, in combination with the grip-lever Q, having pawl *q*, the rack P, and the arm R of lever J, having side pin, *r*, under said pawl, substantially as herein described.

In witness whereof I have hereunto set my hand.

FRANK P. H. LOFTIS.

Witnesses:

WM. F. BOOTH,
H. C. LEE.