

(No Model.)

H. H. HENLEY.
SAFETY GUARD FOR CARS.

No. 547,258.

Patented Oct. 1, 1895.

Fig. 1.

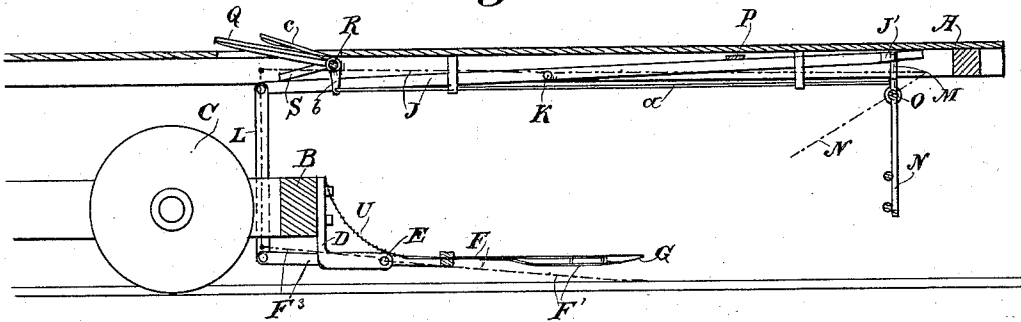


Fig. 2.

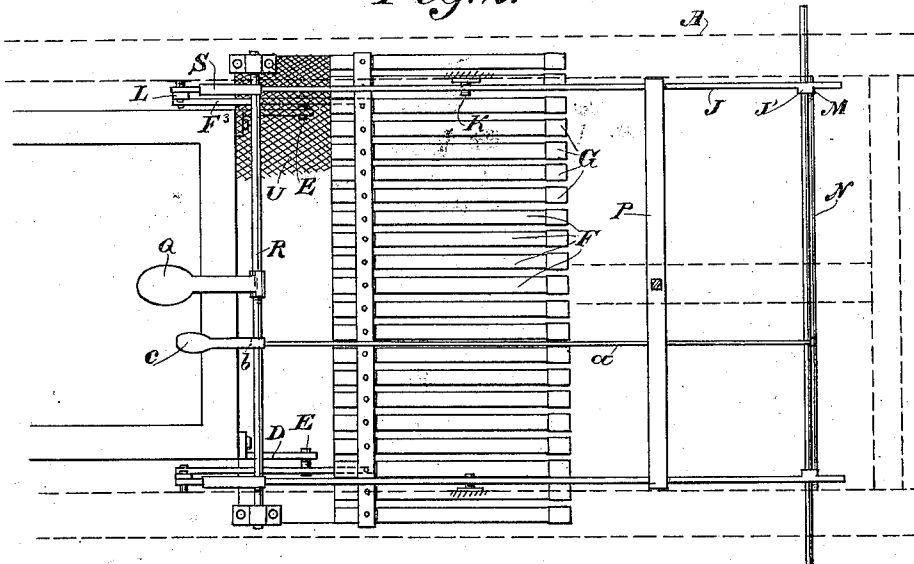


Fig. 3.

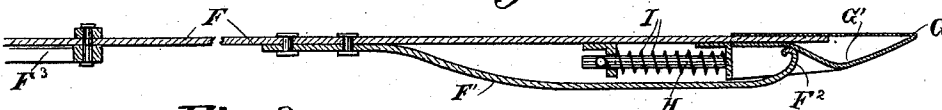
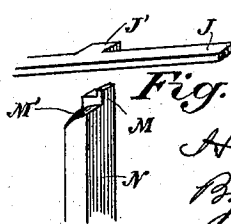


Fig. 3. α.



Fig. 4.



Witnesses,
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UNITED STATES PATENT OFFICE.

HARLAN H. HENLEY, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO THE
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SAFETY-GUARD FOR CARS.

SPECIFICATION forming part of Letters Patent No. 547,258, dated October 1, 1895.

Application filed June 14, 1895. Serial No. 552,830. (No model.)

To all whom it may concern:

Be it known that I, HARLAN H. HENLEY, a citizen of the United States, residing in the city and county of San Francisco, 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 of the same.

My invention relates to a device which is especially adapted for application to street and other cars for the purpose of preventing human beings and other objects from passing beneath the wheels of a moving car.

It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side sectional elevation of the front portion of a car-frame with independent truck. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged sectional view of one of the fingers of the guard. Fig. 3^a shows the tip retracted on the finger. Fig. 4 is an enlarged view of the latch.

A is the floor and framework of the car, which, in the present case, is shown mounted upon independent and supplemental trucks. I have here shown only the front end of the truck-frame B and a single wheel C to show the relative location of the parts of my apparatus. Upon the front of the truck-frame are brackets or supports D, and hinged to these by means of finger-bars F³ and a fulcrum-shaft E, which extends across the front of the car, is a series of independent fingers, the front ends of which are adapted to be raised from the surface of the ground or depressed, so as to rest upon the ground. These fingers consist of elastic steel shanks F, with the flat surfaces presented upwardly and downwardly. Below these fingers are riveted the supplemental curved steel plates F', which extend forward nearly to the front ends of the fingers F, where they are curved upward, as shown at F².

G represents tips, which fit slidably upon the ends of the fingers F, the lower portion of each tip having a triangular form, as shown at G', and movable over the ends F² when the tips are moved backward or forward upon the fingers, as hereinafter described. A spin-

dle or shank H extends rearwardly from each of these tips, passing through suitable guides fixed to the finger F, and by means of coiled springs I the tips are normally forced forward, so that the upturned ends F² of the plates F' form contact with these sliding tips just in rear of the inclined triangular portion G'. When the fingers are thrown down, so as to rest upon the surface of the ground or the track, they will travel over the surface, sliding upon the forward portion of the triangular incline G', and each finger will rise or fall by reason of its elasticity to accommodate the whole structure to irregularities in the surface, such as are caused by cobble-stones, basalt blocks, or other irregular surfacing or paving. If at any time either one of these points strikes a stone which presents an abrupt surface, over which the tip would not ordinarily slide, the tip is immediately forced backward, compressing the spring I, and as it moves backward it is also lifted by the sliding up of the incline forming the rear portion of G' upon the upturned portion F² of the plate F'. This lifts the point of the tip G until it rises sufficiently to slide over the obstruction, when the spring I will instantly force it forward to its normal position, and after passing the obstruction it will again drop, so as to travel upon the surface, by reason of the elasticity of the finger F.

When the device is not in use, it is held up a short distance above the surface of the ground and the track by means of lever-arms J, suitably fulcrumed, as shown at K, and having connecting-links L between them and the rear end of the arms extending back from the fulcrum-shaft E beneath the levers J. The front end of the bar J has a lug J', which is adapted to engage with a catch M upon the upper end of a hanging apron or frame N, which is fulcrumed, as shown at O. This hanging frame may be made of iron or other suitable material, preferably covered with rubber, so as to be soft, and it extends downward to a point near the track.

When the device is set, the lug J' is engaged by the catch M, and the swinging apron N hangs in a vertical position. Whenever a body comes in contact with this swinging device N, the lower portion is thrown

back and the upper portion moving forward about the fulcrum O disengages the catch M from the lug J', thus allowing the front end of the bar J, which projects beyond the lug, to fall upon the curved portion M' of the upper end of the bar N. The bar J is forcibly pressed down by a spring P, of any suitable construction. In the present case it is a flat piece of steel secured to a central timber, and, extending over the bars J upon each side of the frame, it acts to press them both down simultaneously. The projecting ends of these bars, as before described, acting upon the curved end M', will cause the swinging fender N to be tilted upward, as shown in dotted lines in Fig. 1. At the same time as the front ends of the lever J are forced down the links L draw up on the rear ends of the finger-bars F³ and thus throw the tips G down upon the surface of the ground or track, the spring P acting to retain them in this position, so that the object which by this time would have passed to the rear of the swinging guard N would be picked up by the fingers F.

When it is desired to again set the apparatus, it is done by the motorman or operator placing his foot upon a lever Q, which projects from a fulcrum-shaft R extending across the car-frame and journaled at either end. Upon this shaft R and above each of the arms J are projecting arms S, which, when the lever Q is depressed, act upon the arms J to depress them, bending the spring P upwardly and raising the front ends of the arms J until they allow the apron N to swing into its normal vertical position, when the lug J' will again engage the catch M of the apron N and the parts will be set in their former position. It will be seen that in addition to the independent vertical movements of each of the fingers F I have provided a means for preventing any breakage of either of them by striking an immovable obstacle by the peculiar construction and operation of the tips G, thus insuring a continuous and close contact of the front end of the guard with the surface, whatever may be its irregularities. In order to prevent the body or obstruction from being dashed violently against the front of the car-truck when it is received upon the fingers F, I have shown a curved network or other elastic or flexible screen U, extending backwardly and upwardly from the rear of the fingers. If it is desired to disengage the apron N and allow the fingers to drop without contact of the apron with anything, it is done by means of push-rods *a*, the front ends of which form contact with the apron-frame above the fulcrum O, and the rear ends are connected with rocker-arms *b*, turnable loosely upon the shaft R. A foot-lever *c* extends back from the hub or sleeve of the lever *b*, so that the operator may depress it with his foot and easily disengage the apron and drop the fingers. It will be manifest that the yielding self-adjusting tips may be attached to an unyielding or a continuous apron or guard as

well as to the independent fingers, their action being the same in either case.

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

1. In a safety-guard for cars, an inclined apron projecting in front of the car and adapted to receive an object or obstruction and lift it from the surface, in combination with tips slidably connected with the apron, and adapted to move over the surface beneath, and a device by which, when the tips are forced backward, they are raised to pass over an immovable object with which they contact.

2. In a safety-guard for cars, the elastic fingers adapted to rise and fall vertically, having tips slidable upon their outer ends and adapted to move over the surface upon which they rest, and a device by which, when the tips are forced backward, they are raised to pass over an immovable object with which they make contact.

3. In a safety-guard for cars, elastic fingers having a vertical movement, tips slidable upon the front ends of the fingers and adapted to rest upon the surface beneath when the fingers are depressed, plates secured to the lower parts of the fingers having the front ends upturned, inclined surfaces forming contact with said upturned ends whereby the tips are raised when moved to the rear by contact with an immovable object, and springs acting to return the tips to their normal position with relation to the fingers after the object has been passed.

4. In a safety-guard for cars, elastic fingers fulcrumed to have a vertical movement and having tips adapted to move in close contact with the surface when depressed, a swinging apron or fender fulcrumed to the car at a distance in front of the fingers, lever arms fulcrumed to the car having the rear ends connected with the rear ends of the finger bars, and the front ends adapted to engage the upper end of the fender when in a normal position whereby the fingers are raised and maintained above the surface while the parts are in this condition.

5. In a safety-guard for cars, flexible, vertically moving, independent fingers, having tips adapted to move yieldingly over the surface when depressed thereon, fulcrumed finger bars to which the fingers are attached having the rear ends connected with tilting levers upon the frame above, a spring acting to depress the front ends of said levers and thus throw the fingers down into contact with the surface, a swinging guard or fender fulcrumed beneath said levers having the upper end formed to engage with lugs upon the levers when the guard is in its normal vertical position, whereby the fingers are raised out of contact with the surface, and an extension of the levers acting upon the upper end of the swinging guard when the latter is disengaged by contact with some object, whereby this guard

is thrown up out of the way by the action of the spring upon the levers.

6. In a safety-guard for cars, vertically tilting elastic fingers having tips adapted to travel yieldingly over the surface when depressed thereon, and spring-actuated lever arms fulcrumed to the car above, connected at the rear end by links with the fulcrumed finger bars, a swinging guard or fender suspended beneath the front ends of said levers, having catches adapted to engage lugs upon the levers when the fender is in its normal vertical position, whereby the fingers are raised out of contact with the surface, cam surfaces upon the upper end of the swinging guard upon which extensions of the spring-actuated levers press when the guard is disengaged from the holding lugs, whereby the guard is instantly swung up out of the way by its own disengagement.

7. In a safety-guard for cars, vertically movable elastic finger bars having tips adapted to move yieldingly over the surface beneath, when in contact therewith, spring-actuated levers fulcrumed to the sides of the car frame

and connected by links with the rear of the fulcrumed finger bars, whereby the fingers are thrown down into contact with the surface when the levers are released, lugs near the front ends of the levers, a swinging guard suspended beneath and adapted to engage said lugs, so as to raise the upper ends of the levers, and also the fingers, said guard being thrown up into an approximately horizontal position by the pressure of the levers when the guard is disengaged from its holding catch, a means for raising the front ends of the levers and allowing the guard to swing into its normal position and latch the levers, said means consisting of a rocker shaft and levers pressing upon the rear ends of the spring-actuated levers, and a foot lever by which they are actuated.

In witness whereof I have hereunto set my hand.

HARLAN H. HENLEY.

Witnesses:

S. H. NOURSE,
JESSIE C. BRODIE.