W. T. WATSON.

WHEEL GUARD.

APPLICATION FILED JULY 13, 1910.

993,209.

Patented May 23, 1911.

2 SHEETS—SHEET 1.

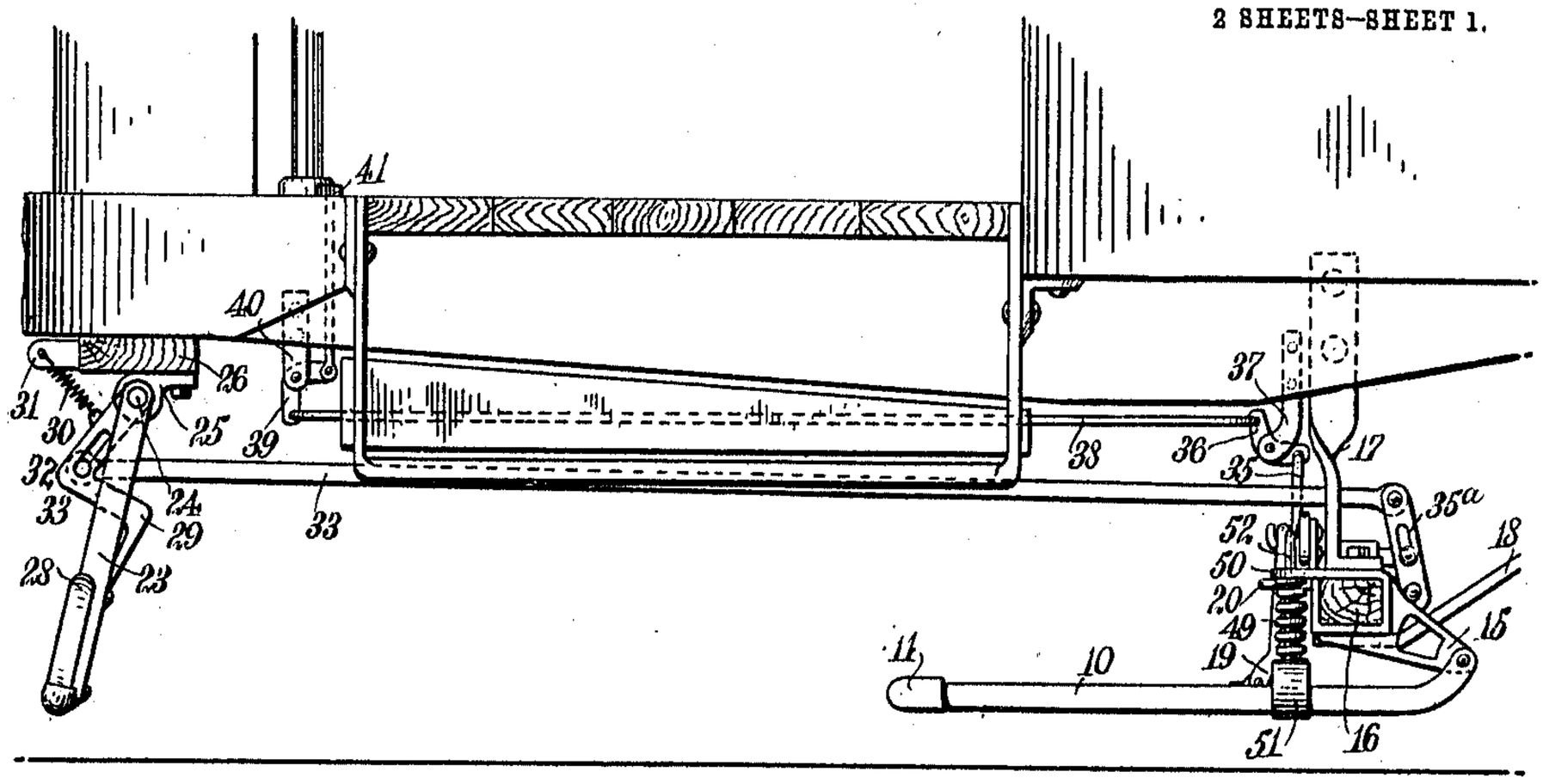


Fig. 1.

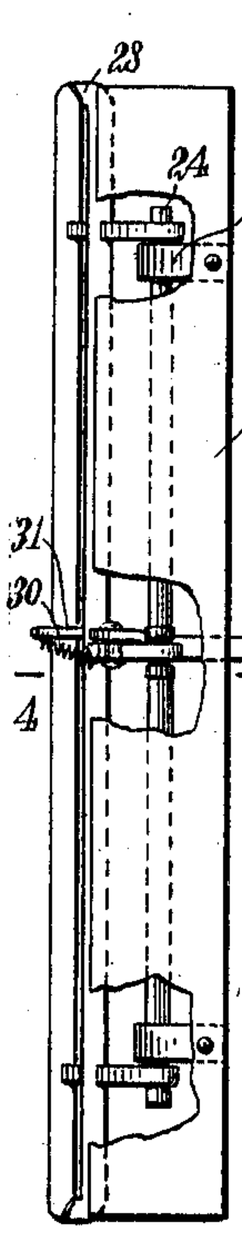


Fig. 2.

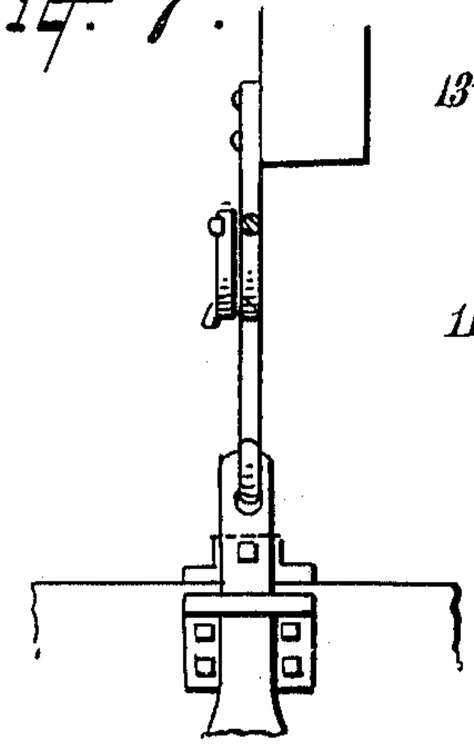
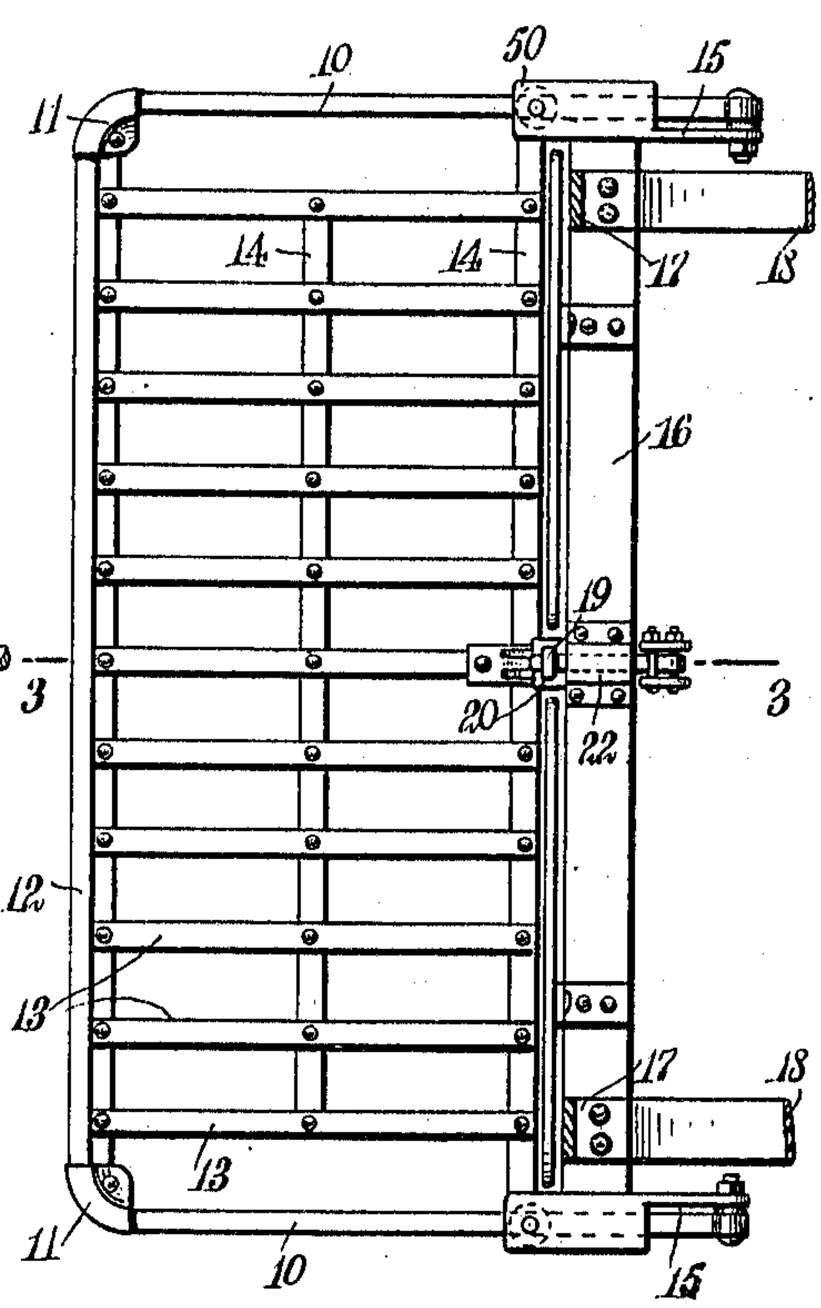


Fig. 7.



WITNESSES:

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2 SHEETS—SHEET 2.

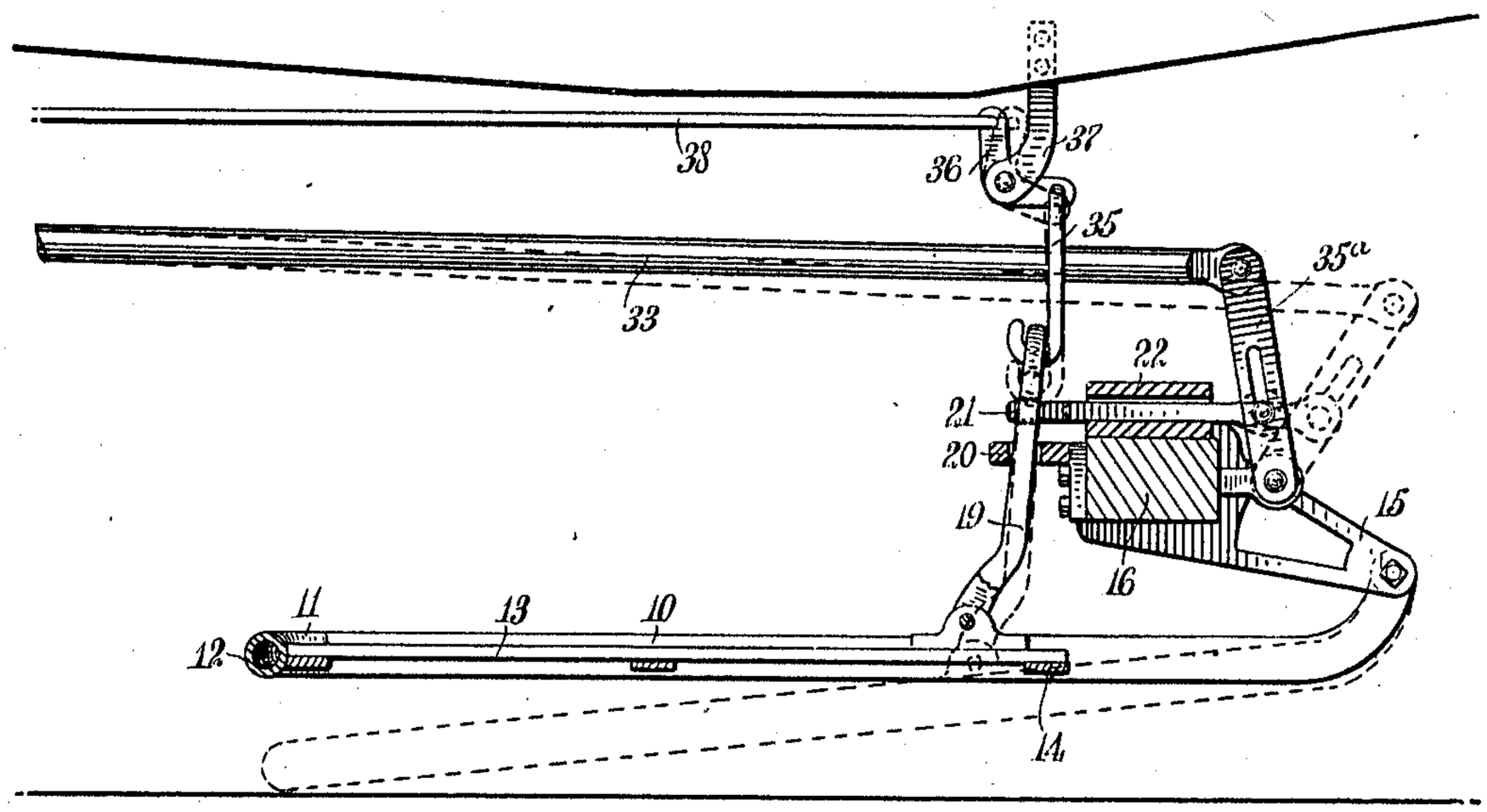


Fig. 3.

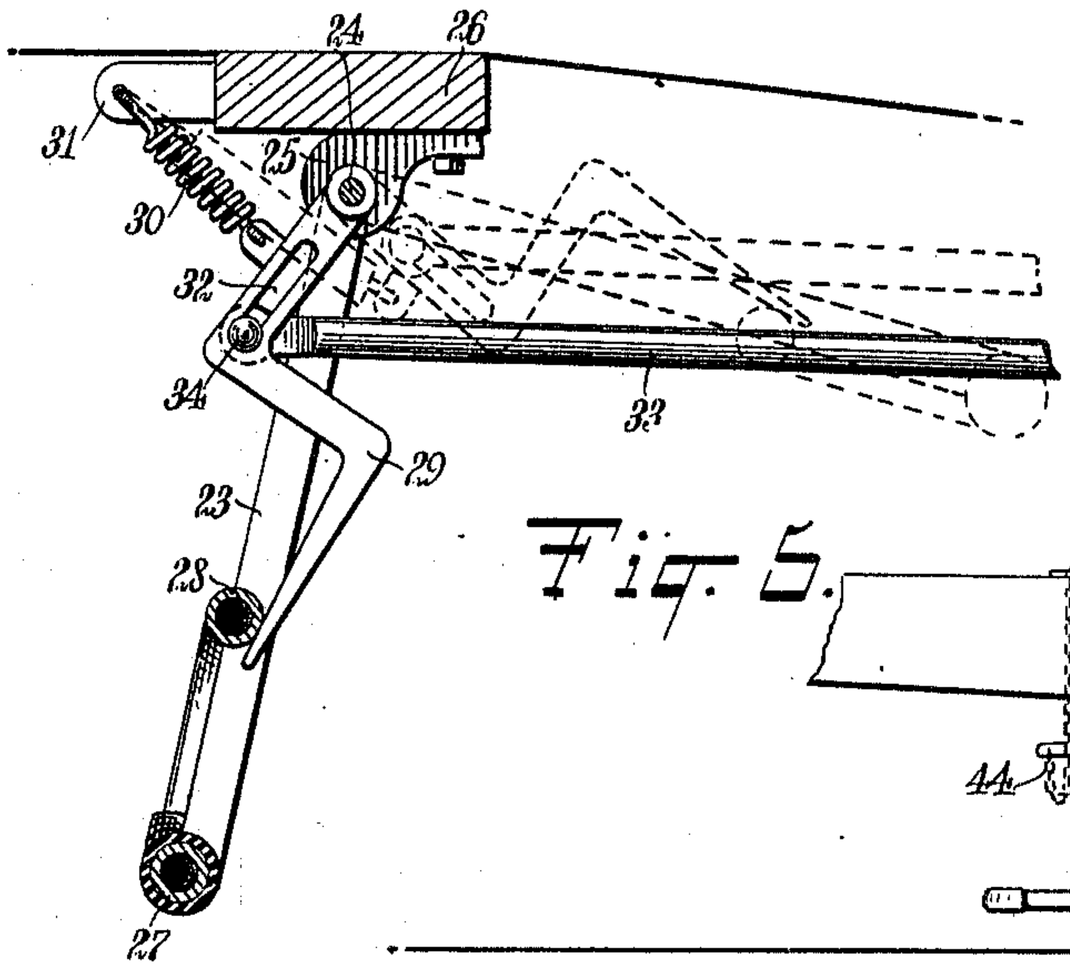
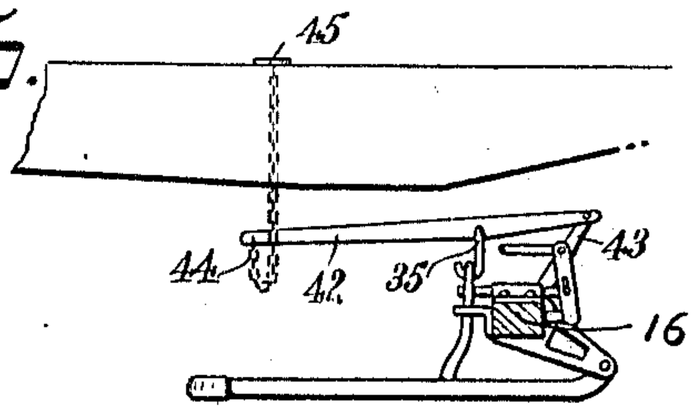


Fig. 4.

Fig. 5.



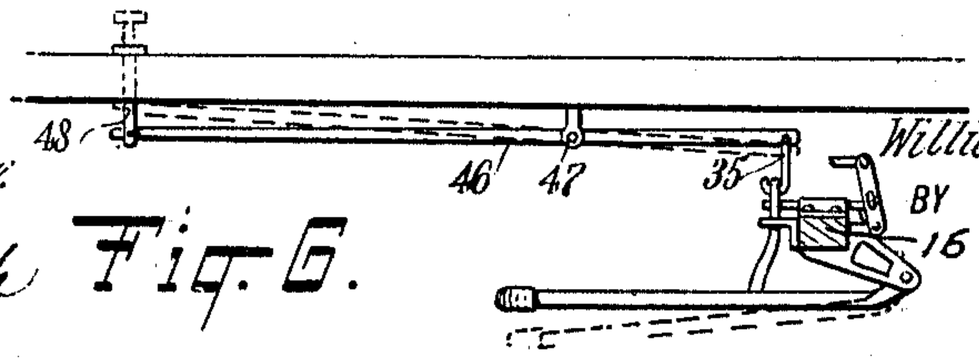


Fig. 6.

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UNITED STATES PATENT OFFICE.

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WHEEL-GUARD.

993,209. Specification of Letters Patent. Patented May 23, 1911.

Application filed July 13, 1910. Serial No. 571,790.

To all whom it may concern:

Be it known that I, WILLIAM THOMAS WATSON, a subject of the King of Great Britain, and a resident of Vancouver, in the Province of British Columbia, Dominion of Canada, have invented a new and Improved Wheel-Guard, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in wheel guards for street cars, and relates more particularly to that type of wheel guard in which there is a fender or cradle normally supported at a short distance above the track but connected to a trip device, by means of which the fender or cradle may be lowered into operative position.

The invention also relates to that type in which the trip device is in the form of a gate pivotally supported adjacent the front end of the car and operatively connected to the fender, so that in case the gate encounters a person or obstacle, the fender will be lowered before the wheels reach said person or other obstacle.

The invention relates particularly to the means for supporting the fender and in the means for automatically releasing the same.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a side elevation of a wheel guard constructed in accordance with my invention; Fig. 2 is a top plan view thereof, portions being broken away; Figs. 3 and 4 are vertical longitudinal sections on the lines 3—3 and 4—4, respectively, of Fig. 2; and Figs. 5 and 6 are side elevations on a smaller scale showing somewhat diagrammatically, other forms which the fender-raising mechanism may assume. Fig. 7 is a front view of the suspension link and parts connected therewith for supporting the fender.

In the specific form illustrated in the accompanying drawings, I employ a fender or cradle, the body of which is constructed in any suitable manner. This fender body includes side members 10, each formed of a steel tube and connected by a corner member 11 to a front frame member 12, also of steel tubing. Between the two side members 10 and in the rear of the front member 12, I form the bed of the cradle, employing for this purpose a series of flat longitudinally-extending steel strips 13, strengthened by transversely-extending steel strips 14. The side members 10 at their rear ends, curve upwardly, and each is pivotally secured to a bracket 15 extending rearwardly from a cross bar or carrier beam 16. This cross bar or carrier beam 16 is held rigid in respect to the car truck or platform by depending hangers 17, and brace rods 18. The pivot bolts connecting the brackets 15 and the side members 10 of the cradle, permit the front edge of the cradle to swing downwardly into engagement with the track or upwardly to a substantially horizontal position above the track. The fender is normally supported in the last-mentioned position, as illustrated in Figs. 1 and 3, the mechanism for supporting it being shown particularly in Figs. 2 and 3.

Pivotally secured to the fender body, intermediate the side edges of the latter and at a considerable distance in front of the pivotal supports of the body, is a suspension link 19, extending substantially vertically. This suspension link is guided in its vertical movement by a bracket 20 on the front side of the beam 16, and above the beam is provided with an aperture through which a locking bolt 21 may extend. This locking bolt as illustrated, is disposed substantially horizontally and is movable forwardly and rearwardly through a guide 22 on the upper side of the beam. When the fender is in its normal position, the bolt 21 is in its forward position and extends through the opening in the suspension link 19, so as to prevent the downward movement of the latter and the fender body. It will be noted that the fender body has a three-point suspension, that is, it is suspended at the rear ends of the two side members and is supported intermediate the side members at a point a considerable distance in front of the other two points of suspension. Thus the fender body is held substantially rigid, and at the same time may be very easily released by moving the locking pin 21 rearwardly. When the fender is released, its front will drop to the track under the action of gravity, but to facilitate this action and insure the dropping of the fender in the shortest possible time, I provide two coil springs 49, at opposite sides of the fender and disposed between the side members 10 and the forwardly-extending brackets 50 on the cross beams 16. For holding each spring in place, the side member is provided with a

clamp 51, which has an upwardly-extending pin guided within the bracket 50 and around which the corresponding spring is coiled. The springs are under compression and normally tend to force the fender downwardly.

For releasing the fender automatically as the car strikes a person or obstacle on the track, I provide a trip gate 23 pivotally suspended from a transversely-extending rod 24. This rod is mounted in brackets 25 carried by a cross bar 26, so that by removing the cross bar, the trip gate and its appurtenances may be entirely removed from the car. The trip gate has a transversely-extending tubular member 27 at its lower end, which may be covered with rubber to lessen the shock when it encounters an obstruction. A second transversely-extending member 28 connects the side members of the trip at a point above the lower member 27. A lever 29 is pivotally suspended from the rod 24, and midway between the ends of the latter. The lower end of the lever is not attached to the transverse member 28, but is held in engagement with the rear side thereof by a spring 30 connecting the lever to a bracket 31 and normally tending to draw the lever forwardly. The lever is provided with a slot 32 extending lengthwise thereof, and the lever is so bent and the slot is so positioned, that the slot occupies an inclined position when the trip gate is in operative position, the lower end of the slot being in advance of the upper end. A rod 33 has its forward end provided with a pin 34, resting in this slot, and has its other end pivotally connected to a lever 35^a extending upwardly from a bracket on the cross bar 16. The lever 35^a has slot-and-pin connection with the locking bolt 21, so that as the rod is moved lengthwise rearwardly, the lever 35^a is swung back and the bolt 21 is pulled out of engagement with the suspension link 19. The slot 32 and the pin 34 constitute one embodiment of an important feature of my invention. It is desirable that the rod 33 be moved rearwardly the required distance to operate the locking bolt 21, while the trip gate is moving rearwardly through a comparatively small angle. The trip gate may swing rearwardly through approximately ninety degrees and may also swing forwardly through approximately ninety degrees, but the only portion of this movement which is essential to release the fender, is the first portion of the rearward movement. It is not desirable to have the lever 35^a of great length or the locking bolt 21 movable through a long distance. By forming the slot 32 inclining downwardly and forwardly, the pin 34 normally rests in the lower end of the slot. As the trip gate swings rearwardly, the rod 33 will be forced rearwardly until the slot 32 reaches a vertical position. As soon as the slot passes the vertical position, so that it inclines downwardly and rearwardly, the pivot pin 34 will slide upwardly to the upper end of the slot closely adjacent the pivot bolt 24, so that further rearward movement of the trip gate will give only a comparatively slight further movement to the rod 33. The fender gate is released before the slot 32 reaches a vertical position, so that the releasing of the fender is insured, but all unnecessary movement of the parts is avoided.

It will be noted that the trip gate may be pulled up forwardly from the normal position without reciprocating the locking bolt or the rod 33, as the pivot pin 34 may ride up the slot, and also, the trip gate may swing away from the lever 29.

In connection with my improved wheel guard, I preferably employ means whereby the motorman may raise the fender to its normal position after it has been released, and without moving from his position on the car platform. In Figs. 1 and 3, I have illustrated a fender-raising mechanism which includes a link 35, hooked into the upper end of the suspension link 19. The upper end of this link 35 is connected to one end of a bell crank lever 36, which latter is pivotally supported in a bracket 37. A rod 38 extends forwardly from the bell crank lever 36 to a second bell crank lever 39 adjacent the front end of the platform. This bell crank lever is pivotally supported in a bracket 40, and is pivotally connected to a push rod 41 extending up through the platform of the car. By pressing downwardly on the push rod 41, the bell crank lever 39 causes the rod 38 to be pulled forwardly and this in turn raises the link 35 and raises the fender. The trip gate tends to assume its normal position, and thus as soon as the fender is raised, the trip gate will automatically bring the locking bolt 21 into operative position.

Instead of using the fender-raising mechanism above described, I may employ that illustrated in Fig. 5. In this figure, I employ a link 42 pivotally supported at its rear end on a bracket 43 fixedly mounted on the carrier beam 16, and connected intermediate its ends to the link 35. The front end of the lever 42 may be connected by a chain, wire, or rod 44 to a handle 45 above the car platform. By pulling up on the handle 45, the link 35 will be raised, as the latter is between the fulcrum and the point of application of power.

In Fig. 6, I have illustrated a lever 46, pivoted intermediate its ends on a bracket 47, and having its rear end connected to the link 35, and its front end connected to a push rod 48. By pressing down on the push rod 48, the fender may be raised.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent:

1. A wheel guard including a cross beam supported from the car, brackets extending rearwardly from opposite ends thereof, a fender body having side members extending beneath said cross beam and pivotally secured to said brackets, a suspension link extending upwardly from said fender body adjacent the front side of said cross beam, and means on said cross beam for detachably engaging with said suspension link for supporting the fender body.

2. A wheel guard including a fender body and side members, a cross beam supported from the car, means for pivotally securing said fender body to said cross beam, a plurality of brackets extending forwardly from said cross beam, a coil spring beneath one of said brackets and normally tending to press said fender body downwardly, and a suspension link in engagement with another of said brackets and serving to normally support said fender body.

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

WILLIAM THOMAS WATSON.

Witnesses:
A. E. GALPIN,
JOHN MCLAREN.