(No Model.) 2 Sheets—Sheet 1.

# C. H. OHM.

## SAFETY GUARD FOR CARS.

No. 409,861. Patented Aug. 27, 1889.

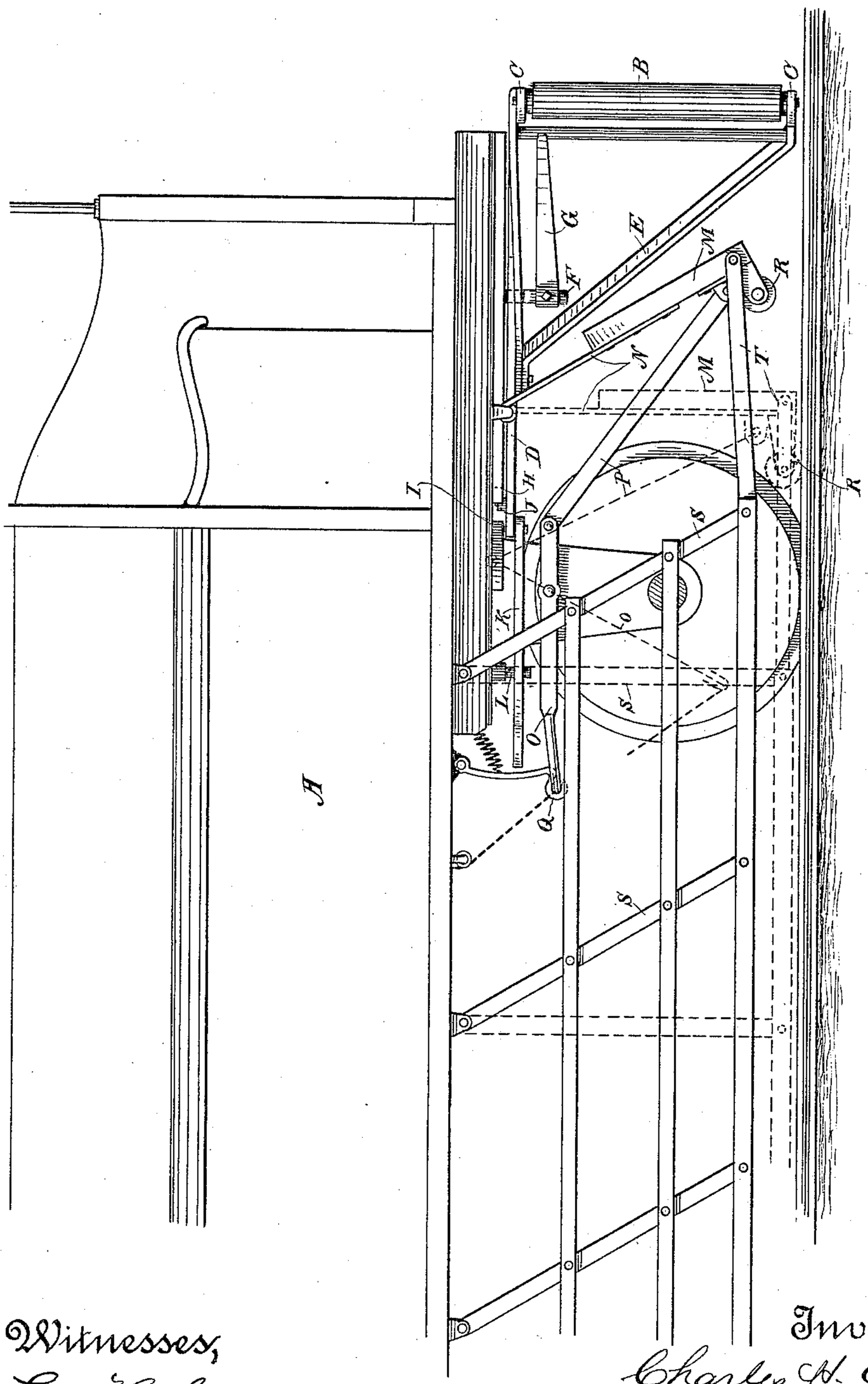


Fig. 1.

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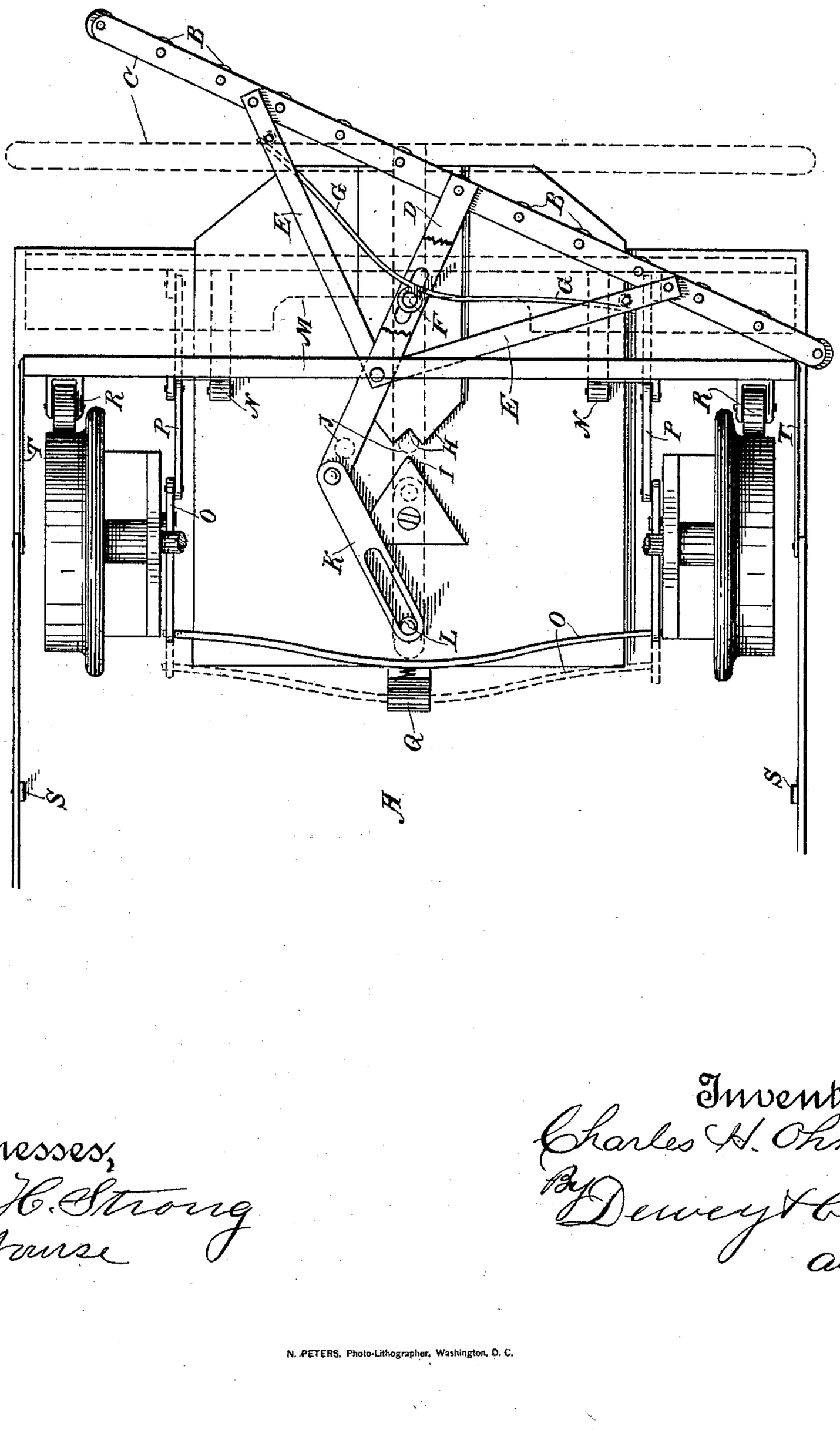
Fig. 2.

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# UNITED STATES PATENT OFFICE.

CHARLES H. OHM, OF SAN FRANCISCO, CALIFORNIA.

## SAFETY-GUARD FOR CARS.

SPECIFICATION forming part of Letters Patent No. 409,861, dated August 27, 1889.

Application filed May 9, 1889. Serial No. 310,149. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. OHM, of 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 protective device to be applied to the front of cable-railway and other cars to prevent persons and things from being carried beneath the wheels.

It consists of a mechanism which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a side elevation showing the device in its normal position ready for operation, the dotted lines showing the secondary and side guards down. Fig. 2 is a bottom view showing the mechanism beneath the car.

A is the car, which in the present case is in the style of the "dummies," so called, which carry the rope-grip mechanism of the cable-railway car, this form illustrating any form of car to which the device is to be attached. The guard consists of a series of vertical rollers B, having the upper and lower ends of their shafts journaled in the horizontal bars C, so that the line of rollers extends in a straight line entirely across the front of the car beyond or to the outer edges of the line of rails upon which the car travels, and the lower support C of the rollers is as near the track or road-bed as it can be brought without actual contact therewith.

From the center of the upper bar C a bar D extends backward at right angles beneath the front of the car, said bar being connected with the lower bar C and with the outer ends of both bars by suitable diagonal bracing-bars E, as shown. The bar D is slotted, and the slot fits over a stout pin or king-bolt F about midway between the front and rear ends of the bar, so that the bar may turn about this bolt, and in so turning the roller-guard will be turned to one side, so as to stand at an obtuse angle with the direction of the travel of the car, and any body which may be in contact with the rollers will, by striking upon one side or the other of the center, force the roller-frame around to stand at such an angle, and the action of the rollers will tend to force the body off to one side of the track as long as the car continues in motion.

G is a spring fixed upon the king-bolt, and the ends extending forward and outward press against the rear part of the roller-guard, or an attachment thereto, and keep it pressed toward the front, so that the king-bolt ordinarily occupies the rear end of the slot in the bar D; but when the guard is in contact with any body the elasticity of the spring is sufficient to allow it to be forced backward, at the same time turning to one side.

Upon the front of the car, and above the rear end of the bar D, is a catch having a V-shaped notch H, and directly in line behind this is an angle or point I. A pin J passes through the rear end of the bar D, and when the guard stands in its normal position transversely across the front of the car this pin is held in the V-shaped notch by the action of the spring before described, and this retains the guard in its proper position; but as soon as the guard comes in contact with any object, the bar D being forced backward, moving upon the king-bolt, and the spring G yielding for this purpose, the pin J moves out of the V-shaped notch, and coming in contact with the pointed or angular block I it will be diverted to either one side or the other, and thus acting to turn the guard toward the side upon which the weight of the body in contact with the guard may be greatest.

K is a link, the front end of which is pivoted to the rear end of the bar D, and the rear end is slotted, so as to move upon the pin L, the length of this slot being sufficient to allow the guard to turn as far as may be desired, and acting as a stop to prevent its turning too far. Behind the roller-guard, previously described, is suspended a second guard or scraper M by means of links N, which are hinged beneath the body of the car.

O is a yoke, the sides of which are fulcrumed at convenient points beneath the body of the car, and it has connecting-rods P, extending from the ends of the yoke down to the scraper M, to which they are pivoted, as shown. The rear central portion of the yoke engages with a spring-actuated hook Q, which serves to hold the yoke up, and pressing on the connecting-rods P, before described, it forces the scraper

forward, and as it swings about its suspending-links N it is raised upward to a sufficient height above the road-bed and the track, being entirely out of contact with them while the car is running under ordinary conditions. The rear end of the slotted link K, which extends backward from the bar D, as before described, stands in close proximity with the catch or hook Q, and when the guard comes in contact with any body upon the track, and is forced backward by such contact, the rear end of the bar K forces the catch Q backward, disengaging it from the yoke, which is thus allowed to fall by its own weight, turning about the fulcrum-pins and raising the upper ends of the connecting-rods, which, acting upon the scraper M, will draw it downward and backward until its lower edge comes in contact, or nearly so, with the track or roadway, so that it will prevent any body which may have passed beneath the front roller-guard from passing beneath the wheels. Upon each end of this scraper are journaled small wheels or rollers R, at such points that when the scraper is dropped, as just described, these rollers will come in contact with the forward wheels of the car, and they act as a stop to prevent the scraper from being forced any farther back, and at the same time the forward rotation of the car-wheels acts to rotate these rollers in the opposite direction, and in case any body should be thrown directly in line with the wheels, having escaped the roller-guard and the scraper, these small rollers, by turning in the reverse direction, tend to throw the body forward and away from the line of the car-wheels. When the car has been stopped and the roadway cleared, the scraper is lifted from the track and placed in its normal position by lifting the yoke and causing it to engage again with its spring-catch, which may be done by means of a short rod or cord connecting with the yoke and extending up to within easy reach of the operator on the car. The roller-guard is then turned into its ordinary position, standing transversely across the front of the car, in which the pin J in the rear end of the bar D will engage with the V-shaped notch H, as before described, and thus hold it in that position.

The essential feature of this invention is the swiveled roller-guard so suspended that if a body comes in contact with it it will turn to one side or the other, so that the frictional contact of the body, which is still resting upon the ground, will cause the rollers to act upon it and force it off to one side and away from the car-wheels, while at the same time the secondary guard or scraper will be thrown down into such close contact with the track and road-bed as to prevent anything from passing beneath it.

Cars of this description are usually provided with rails or guards outside the line of wheels extending parallel with the track and near to the ground. In my construction these side bars are suspended by bars S, which normally stand at an angle similar to the angle of the scraper M when it is raised from the track. This scraper is connected with the side bars by rods, as shown at T, and when the scraper is thrown backward and downward so as to come down to the road-bed the side bars will simultaneously move downward thus preventing anything from rolling under the cars from the side.

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

1. The combination, with the car, of a vertical guard pivoted to a king-bolt beneath the front of the car and adapted to swing about said bolt, so as to stand at an obtuse angle with the line of the track upon either side of the center, substantially as herein described.

2. A guard consisting of the vertical rollers journaled in a frame-work which extends across the front of the car, said frame-work turning upon a king-bolt beneath the car, so as to throw the roller-guard to one side or the other of the center and in an obtuse angle with the line of travel, in combination with a supporting-bar and a spring rotating device, whereby said guard is held at right angles with the line of track when not in action, substantially as herein described.

3. The roller-guard extending across the front of the car, a supporting-bar and frame-work extending horizontally therefrom, a king-bolt or pin passing through a longitudinal slot in said bar or frame-work, so that the guard may be moved backward and forward upon said king-bolt, a spring whereby the guard is forced toward the front, a pin in the rear end of the frame-work, and a V-shaped notch into which said pin falls and is retained by the action of the spring when the guard is in its normal position, substantially as herein described.

4. The guard extending across the front of the car, having the rearwardly-extending bar or frame-work slotted and movable upon a fulcrum-pin, the V-shaped notch and the pin upon the frame-work engaging said notch, and a spring whereby it is held in contact therewith, in combination with an angular guide fixed to the car behind said catch, so that when said frame-work is forced backward it will be released from the latch and will be forced to one side or the other by striking the angular projection, substantially as herein described.

5. The guard extending across the front of the car, the bar or frame-work attached to the same extending horizontally backward and pivoted so as to allow the guard to turn to one side or the other of the center, the latch by which the guard is held in its normal position, and a guide by which it is thrown to one side or the other when forced backward, in combination with the link K, connected with the rear of the bar or frame-work and

acting as a stop when the guard is turned to one side or the other, substantially as herein described.

6. The guard extending across the front of the car, having a frame-work extending horizontally backward and fulcrumed beneath the car, so as to allow the guard to turn from side to side about the vertical pivot, in combination with the transverse board or scraper suspended behind the guard, the yoke fulcrumed beneath the car and connected with the scraper by rods, and the latch by which said yoke is held and the scraper maintained out of contact with the track, substantially as herein described.

7. The scraper suspended beneath the car and the yoke fulcrumed beneath the car, having its ends connected with the scraper by rods and the rear portion suspended by the spring latch or catch, in combination with the swinging guard fulcrumed across the front of the car, a rearwardly-extending frame, and the link K, actuated thereby and adapted to disengage the catch and allow the yoke to drop when the guard comes in contact with an object, substantially as herein described.

8. The transverse board or scraper suspended by links from the car, a lever-yoke, connecting-rods, and a latch whereby said scraper is normally held out of contact with the track and road-bed, a swinging guard extending across the front of the car and adapted to disengage the latch and drop the scraper, in combination with rollers fixed upon the rear portion of the scraper, so as to come in contact with the forward wheels of the car and be rotated in the opposite direction when the board is dropped, substantially as herein described.

9. The transverse scraper suspended from the front of the car, and a lever and links which permit it to be depressed about its point of suspension when released, in combination with the suspended rising and falling side rails upon the car, and rods connecting them with the scraper, so that they will be moved simultaneously therewith, substantially as described.

In witness whereof I have hereunto set my hand.

CHARLES H. OHM.

Witnesses:
S. H. NOURSE,
H. C. LEE.