

(No Model.)

G. GLENNIE & R. BOONE.
SAFETY GUARD AND FENDER FOR CARS.

No. 587,524.

Patented Aug. 3, 1897.

Fig. 1.

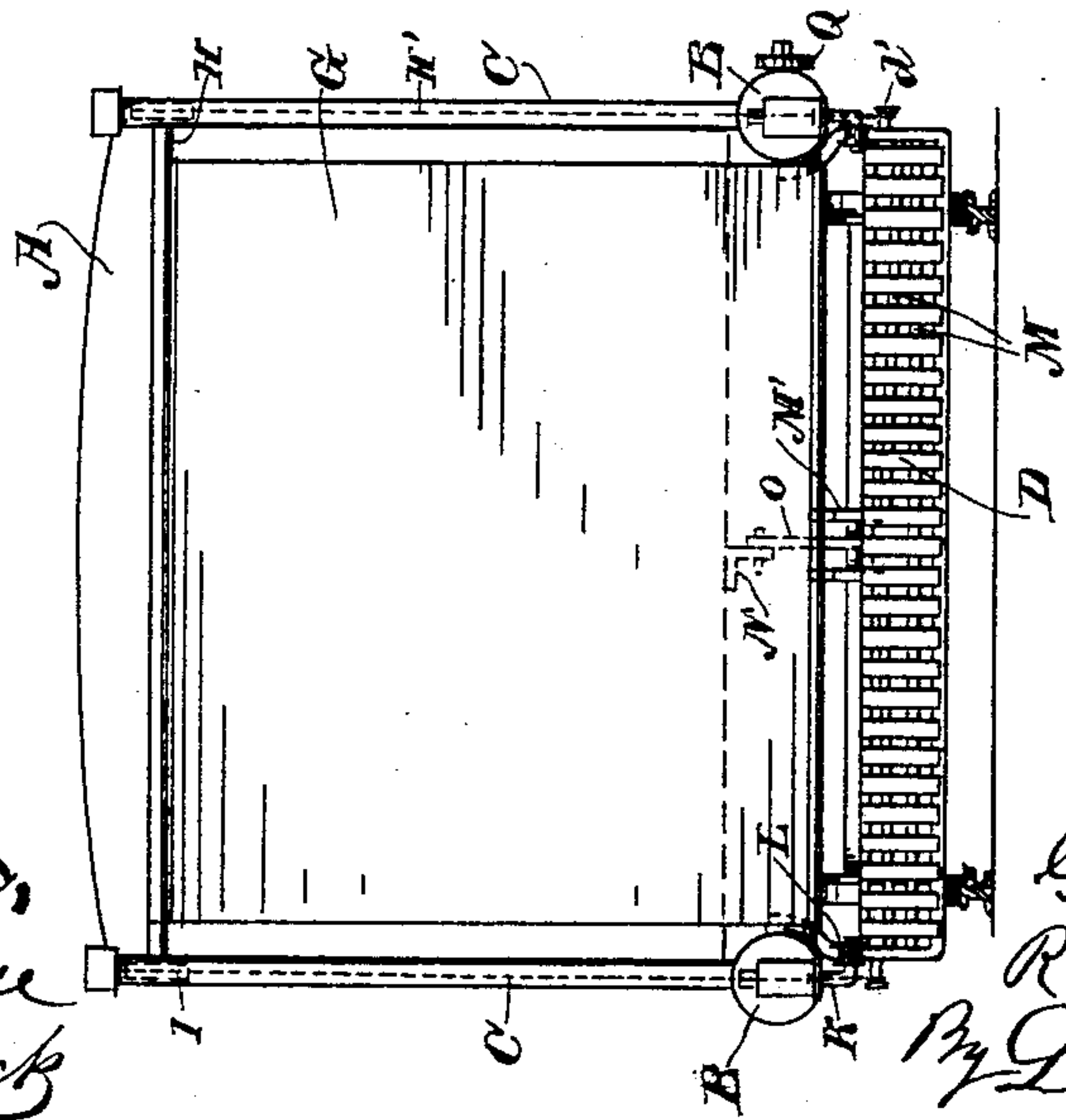


Fig. 2.

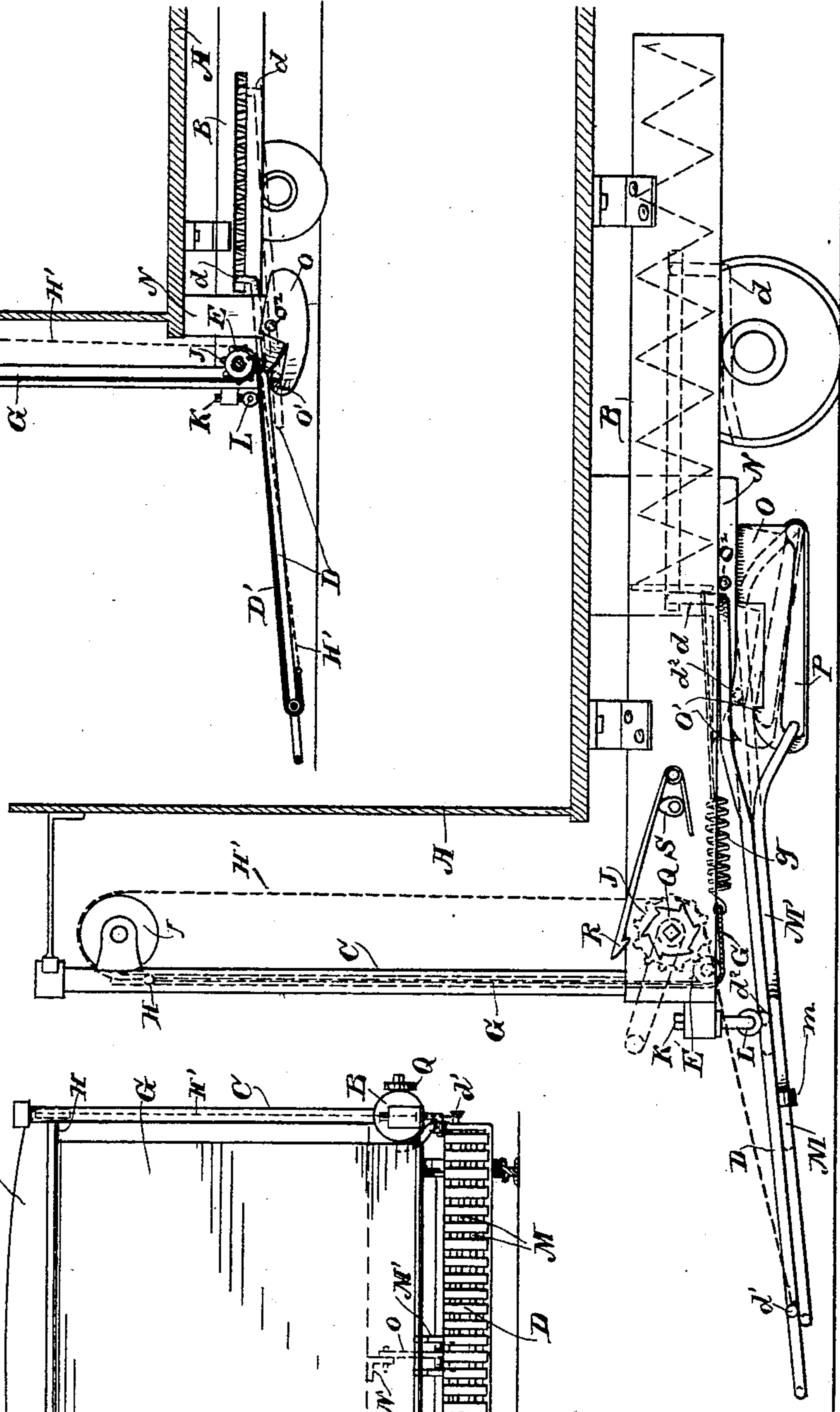
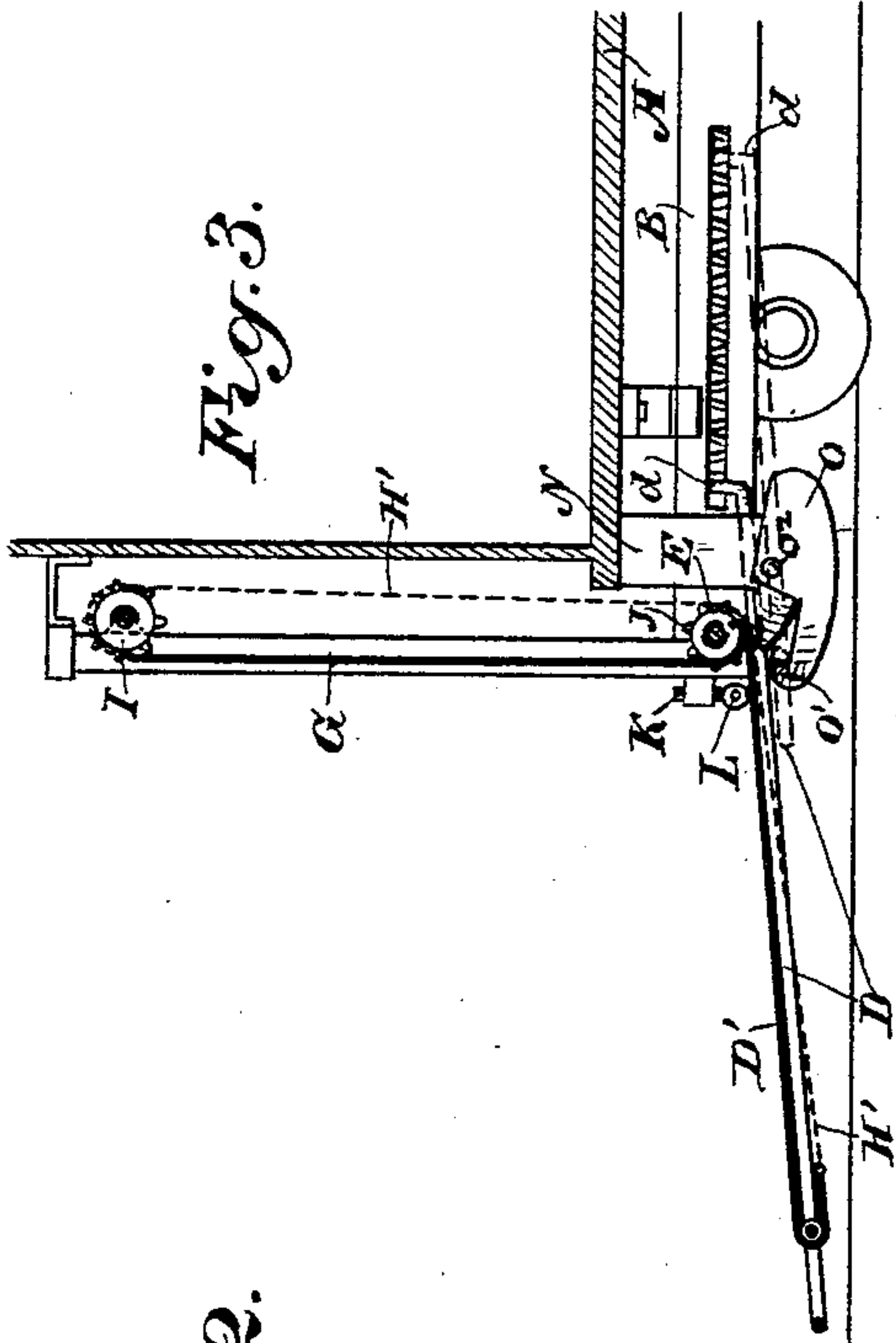


Fig. 3.



Witnesses,
J. H. Boone
H. F. Oscheck

Inventor,
George Glennie
Ralph Boone
By D. W. Dwyer & Co.
Attys.

UNITED STATES PATENT OFFICE.

GEORGE GLENNIE AND RALPH BOONE, OF SAN FRANCISCO, CALIFORNIA.

SAFETY-GUARD AND FENDER FOR CARS.

SPECIFICATION forming part of Letters Patent No. 587,524, dated August 3, 1897.

Application filed December 29, 1896. Serial No. 617,325. (No model.)

To all whom it may concern:

Be it known that we, GEORGE GLENNIE and RALPH BOONE, citizens of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Safety-Guards and Fenders for Cars; and we hereby declare the following to be a full, clear, and exact description of the same.

10 Our invention relates to an improved safety-guard and fender which is especially applicable for use upon street-railway or other cars to prevent the cars from running over people or obstructions which may be presented in
15 front of the cars.

Our invention consists, essentially, of an automatically-operating platform or apron and mechanism connected therewith whereby its operation is effected.

20 Referring to the accompanying drawings, Figure 1 is a front view of our fender. Fig. 2 is a side elevation of the device, showing it extended, its normal position being indicated by dotted lines. Fig. 3 shows a modification
25 of the same.

A represents a car on which our device is adapted to be used. In the present case it represents a street-car.

30 B B are horizontal tubes, preferably made of gas-pipe, extending rearwardly beneath each side of the car and projecting to the front sufficiently to have connected with them the vertical tubes C.

35 Both the tubes B and C are slotted on the inside for connections, as will be hereinafter described.

The movable platform D is made of any suitable or desired material. It may consist of an exterior framework which may have
40 elastic bars fixed longitudinally or transversely thereon, the frame being made sufficiently stiff to receive and support any person or object which may be violently thrown thereon, as shown in Fig. 1, or the receiving-surface may consist of a flexible apron
45 D', as shown in Fig. 3.

In the construction shown in Figs. 1 and 2 the object which may be struck by the fender is prevented from striking the car-front
50 by means of a vertically-slidable flexible apron G, the lower end of which passes around a guide-roller E' and is connected with a ten-

sion spring or springs g, which act to draw the apron back beneath the car when the fender and platform are retracted and allow
55 it to be drawn up between the uprights C when the fender is extended. The upper edge of the apron G is connected with a rod or bar H, the ends of which slide in channels or guides of the uprights C and which are
60 connected with chains or ropes H'. These chains pass around pulleys I at the top, thence around pulleys on the winding-shaft, and thence out to points of attachment d' upon
65 the horizontally-movable fender D, so that the movements of the fender will be transmitted to the apron to move it up or down. This construction may be employed when the car is so mounted upon its wheels or trucks
70 that there is plenty of room for the apron to pass back beneath the car, but when there is not sufficient room for this the apron may be coiled upon a drum or roller E, which is preferably mounted upon the shaft through which
75 power is transmitted to retract the fender. In this construction, which is well shown in Fig. 3, we have shown the surface of the fender covered by a flexible apron D', and both
80 aprons G and D' are coiled upon the same roller when the fender is retracted and are uncoiled when it is extended, so that the horizontal one following the movement of the fender is rapidly projected with it to the front, while the vertical apron will be as rapidly
85 moved upward in front of the car, so that it will protect any person or object from injury if the latter is dashed against it suddenly by the action of the moving car and apron.

The side bars of the apron are continued rearwardly, as shown at d, and so curved as
90 to enter the slots within the horizontal tubes B, and they are connected with springs therein, the normal tendency of which is to force the apron toward the front. These springs are either compressed or extended, according
95 to their position with relation to the side bars of the platform, so that when the latter is withdrawn to its normal position the tension of the springs is conserved ready to actuate the platform when released and shoot it out
100 rapidly to the front.

The chains H', previously mentioned, pass over pulleys I, near the upper ends of the vertical tube C, and are connected with the

transverse rod H, which carries the vertically-moving apron. From the pulleys they extend down outside and behind the tubes, passing around sprocket-wheels J, thence extending forward and being attached to the front edge of the apron D', the apron in this case passing around a roller at the front of the fender and thence beneath it, as shown. By this construction it will be seen that all the movements of the horizontal apron will be communicated through the chains to the vertically-moving apron, and the movement of the two aprons either to fold or unfold will be coincident, they being rolled, as before described, upon a common roller, which may be actuated by a coiling spring.

Through the front ends of the framework or projecting just in front of the tubes C are vertically-moving rods or bars K, the lower ends of which carry rollers L, and these rollers are grooved to travel upon the side bars of the apron, so as to prevent the latter from rising too much from the street-surface, the springs which actuate these bars yielding to allow any necessary vertical movement of the apron if it strikes obstructions, while normally keeping it down to the surface.

Beneath the apron is a slidable frame M, having guides *m* traveling upon the side bars of the apron-frame and having bars M' extending rearwardly from the central portion, the whole being slidable with reference to the apron-frame. We have hereinafter called this the "trigger-frame."

To a suitable support or attachment N, fixed to the car or truck, is pivoted at O² a plate O, having at the front end an upward projection or catch O'. Beneath is a channel formed by a curved plate P, and in this channel the transverse bar which forms the rear end of the extension M' is adapted to travel.

The operation of these parts will be as follows: When the apron-platform is extended, it projects somewhat beyond this frame M, which is beneath it, and when the platform is to be retracted it is done by means of a sufficiently-powerful crank or other mechanism which is applied to the end of the roller-shaft upon which the aprons are coiled. By turning this the apron-frame is retracted, the arm M' moving with it in the channel beneath the swinging latch, previously described, until the rear end of the arm reaches the rear end of the channel. The plate O is so pivoted that the rear end naturally tilts downward and brings the front end or catch O' upward. The rear end d² of the apron-carrying frame sliding over the front inclined portion of the catch tilts the plate and drops in behind the catch, and when the parts are thus set the front end of the trigger-frame will be projecting beyond the front end of the apron-frame, in which position it is in readiness to strike any obstruction or person which may be presented in front of the moving car. When the trigger-frame thus strikes such an object, it will be forced rearwardly,

and it forcibly tilts the plate O until the gate at the front end is disengaged from its connection with the rear of the apron-frame. Being thus released the springs act to force the apron-frame to the front, and so doing both the horizontal and vertical aprons are uncoiled and instantly take the position, the one to receive the falling person or object and the other to protect them from injury by striking against any hard portion of the car in the rear of the vertical apron. As soon as the transverse bar of the trigger-frame reaches the end of the slot P, in which it travels, it will be arrested before the apron-frame has reached the full limit of its forward movement, and this stops the trigger-frame, so that the apron-frame is projected beyond it, as shown in Fig. 2.

When the mechanism is in operation, it is necessary to prevent the apron-frame from being forced to the rear by the violence of the blow which it may strike the object in front, and this is prevented by means of a ratchet wheel or wheels Q, fixed upon the rotary shaft of the chain-drums and aprons, and a pawl R, which engages the teeth of this ratchet and prevents its being rotated or the apron being moved backward. When the apron is to be again retracted, this pawl is thrown out of engagement by means of a cam or crank-arm S, which is turned to lift it out of engagement with the ratchet-wheel.

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

1. A safety-guard or car-fender consisting of a horizontally-movable spring-actuated frame with a receiving-surface thereon, a vertically-movable apron with vertical guides by which it is directed and supported, a roller situated above the fender-frame and at its junction with the fender whereby the apron may be coiled, a connection from the outer end of the apron to the outer end of the fender-frame and means for retracting the horizontal fender-frame and the vertical apron simultaneously.

2. In a safety-guard and fender for cars, a horizontally-movable spring-actuated fender-frame adapted to be projected to the front from its normal position in line with the front of the car, a receiving-surface carried thereon, vertical guides with a vertically-moving flexible apron guided between them, a roller situated above the fender-frame and at its junction with the fender whereon the apron may be coiled, means by which the two surfaces are projected at right angles with each other by the forward movement of the fender-frame, flexible chains or cords passing over guide-pulleys, the upper ends of said chains being connected with the upper ends of the vertically-movable apron, and the lower ends with the fender-frame whereby the movement of the latter is communicated to the vertical apron.

3. In a safety-guard and fender for cars, a

horizontally-movable spring-actuated fender-frame, a flexible receiving-surface supported thereby, a flexible apron having the upper end provided with a transverse rigid bar and 5 vertical guides within which said bar is adapted to move, the lower end of said vertically-moving apron being so attached that it is moved in unison with the fender, chains connected with the transverse bar of the vertical 10 apron passing over pulleys at the upper ends of the guides, thence downward over sprocket-wheels in the rear of the vertical guides, said chains having their lower ends attached to the horizontally-moving fender-frame, a mechanism for rotating the sprocket and apron-shaft 15 whereby the engagement of the sprocket with the chains serves to retract the fender-frame against the action of the springs and to simultaneously retract the apron.

20 4. The combination with a horizontally-movable spring-actuated fender-frame of a trigger-frame slidable longitudinally beneath the main frame and normally projecting in

front of the said frame, when the latter is retracted, a tilting plate having a latch upon the 25 front end adapted to engage a catch upon the rear of the main frame, a channel formed substantially horizontal in the lower portion of the tilting plate and in which the rear bar of the trigger-frame is movable, said channel 30 being so disposed that it serves as a stop for the trigger-frame to project the latter when the main frame is retracted and latched, and the opposite end of the channel serves as a 35 stop for the trigger-frame when the main frame is projected so that the trigger-frame will be retracted beneath the main frame when the latter reaches its full extension.

In witness whereof we have hereunto set our hands.

GEORGE GLENNIE.
RALPH BOONE.

Witnesses:

S. H. NOURSE,
JESSIE C. BRODIE.