No. 786,393. PATENTED APR. 4, 1905.

C. A. WILLARD.

STREET CAR SAFETY GUARD.

APPLICATION FILED JUNE 20, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

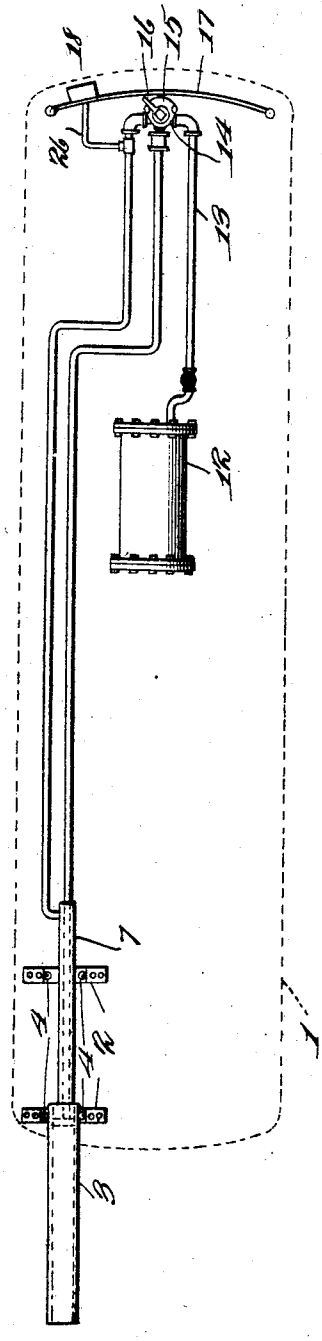
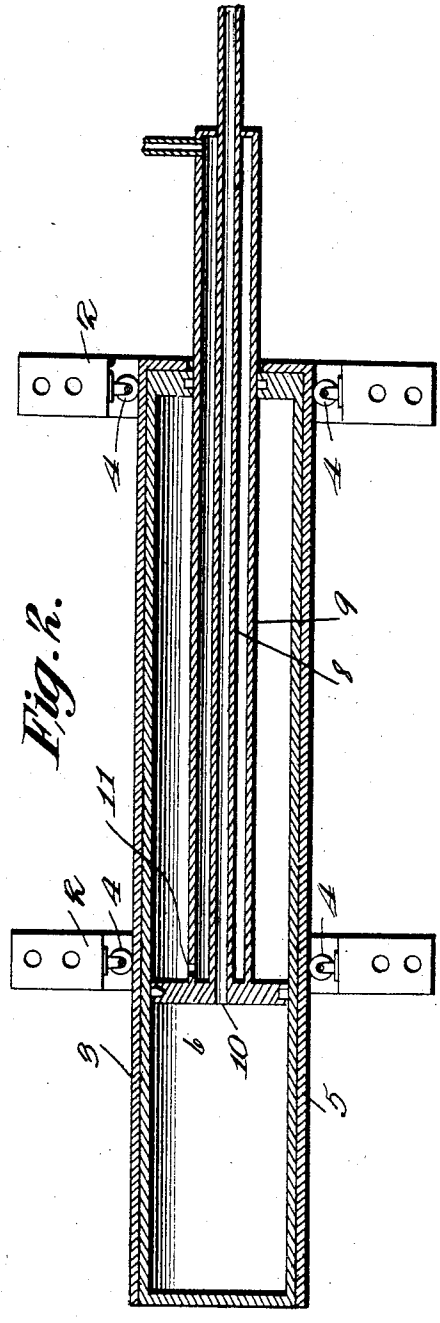


Fig. 2.



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Fig. 4.

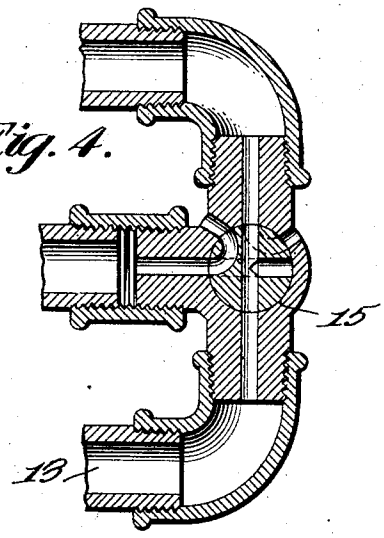


Fig. 5.

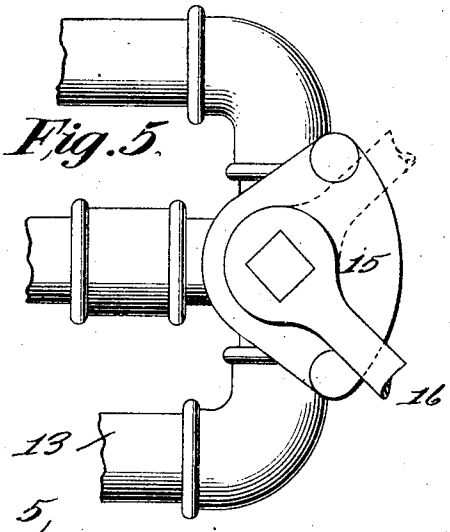


Fig. 6.

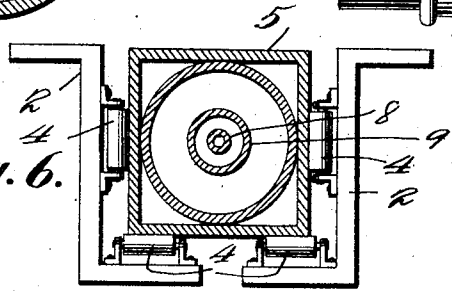
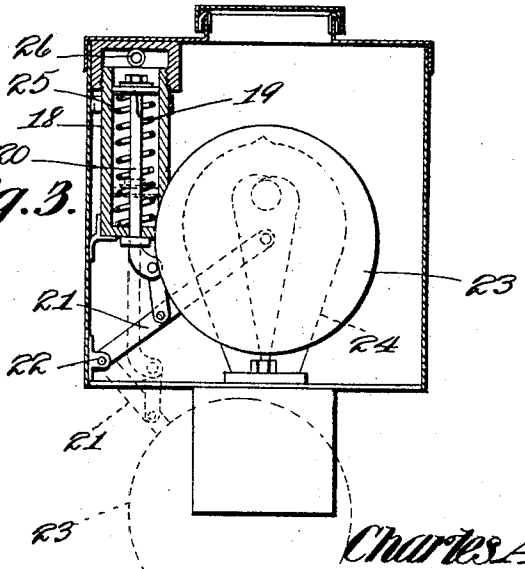


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES A. WILLARD, OF ST. LOUIS, MISSOURI.

STREET-CAR SAFETY-GUARD.

SPECIFICATION forming part of Letters Patent No. 786,393, dated April 4, 1905.

Application filed June 20, 1904. Serial No. 213,372.

To all whom it may concern:

Be it known that I, CHARLES A. WILLARD, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a new and useful Street-Car Safety-Guard, of which the following is a specification.

My invention relates to safety-guards for street-cars, such as are represented in Letters Patent No. 724,766, granted to me April 7, 1903, in which a movable bar or member is adapted to be projected in rear of the car to prevent passengers, upon alighting, passing behind the car and in front of a car approaching on an adjacent track, and has for its objects to produce a comparatively simple inexpensive device of this character wherein the guard or member may be moved readily to its obstructing or unobstructing position.

A further object of the invention is to provide upon the front of the car a signal which will be displayed simultaneously with the movement of the guard to its obstructing position for giving notice of the latter fact to the operator of the approaching car.

To these ends the invention comprises the novel features of construction and combination of parts more fully hereinafter described.

In the accompanying drawings, Figure 1 is a bottom plan view of a car having my improved device applied thereto. Fig. 2 is a central longitudinal section through the guard. Fig. 3 is a front end view of the car, showing the signal applied thereto. Fig. 4 is a view of the valve for controlling the admission of a fluid under pressure to the guard for operating the same. Fig. 5 is an elevation of the valve-casing. Fig. 6 is a transverse sectional elevation of the guard member and its supporting-brackets.

Referring to the drawings, 1 designates a car which is conventionally shown herein and may be of the usual or any appropriate construction, there being secured beneath the bottom of the car depending brackets or hangers 2 for sustaining a movable guard or member 3 and having rollers or other antifriction devices 4, upon which the latter travels. The guard 3, which normally occupies an unobstructing position beneath the car and is adapted for longitudinal movement or reciprocation to an obstructing position to project in rear thereof, is preferably in the form of a horizontally-disposed elongated tubular member or cylinder composed of metal and having an outer covering or casing 5, of wood, and has disposed therein a relatively fixed piston-head 6, carried at one end of a member or piston 7, immovably mounted beneath the car and telescoped with the relatively movable guard member 3, the member or piston-rod 7 being preferably in the form of an inner pipe or tube 8 and an outer pipe or tube 9, centrally through which the pipe 8 extends and communicates with the member or cylinder 3 in advance of the head 6 through the medium of a port 10, while the tube 9 communicates with the cylinder in rear of the head 6 through a port 11.

Sustained beneath the car is a tank or reservoir 12, in which is stored a supply of air or other fluid or liquid under pressure and connected, by means of a pipe or duct 13, with the casing 14 of a three-way valve 15, the tubes or ducts 8 and 9 being also in communication with the casing 14. In this connection it is to be noted that when the valve 15, which is provided with a suitable operating-handle 16, is turned in one direction the air or fluid under pressure will flow from the tank 12 through the ducts 13 and 8 and be delivered in advance of the head 6, thereby moving the cylinder or guard 3 outward to a projecting obstructing position in rear of the car, and that when turned in the other direction the air under pressure will pass from the tank to the duct 9 and be delivered to the port 11 in rear of the head 6, thereby acting to positively move the member 3 to its normal unobstructing position beneath the car.

Mounted upon the front dashboard 17 of the car is a cylinder 18, having therein a movable piston 19, the rod 20 of which is pivotally connected with an arm or member 21, in turn pivoted, as at 22, to the dashboard and carrying for movement a target or shield 23, which normally rests in front of and obscures a signal 24 in the form of a lamp upon the dashboard, the parts being maintained in normal position by means of a spring 25, disposed within the cylinder to bear upon the

piston-head 19 at one side of the latter. The cylinder 18 is connected at the side of the head opposed to the spring 25, by means of a pipe or duct 26, with the pipe or duct 8, through which the fluid under pressure passes for projecting the guard 3, whereby when the valve 15 is turned to position for moving the guard to its obstructing position a sufficient quantity of the air will pass through the duct 26 into the chamber 18 for actuating the piston 19 against the action of the spring 25 to move the target or shield 23 from in front of the lamp 24, thereby displaying the latter as a signal to notify the operator of a car approaching on an adjacent track that the guard is in position to prevent persons passing behind the car, which is at rest and in front of the approaching car. Upon movement of the valve to retract the guard 3 the air will escape from the cylinder 18, thus permitting the spring 25 to return the target to normal position for obscuring the signal.

From the foregoing it is apparent that I produce a comparatively simple mechanism which may be readily manipulated and will effectually prevent accidents due to persons passing behind one car in front of an approaching car and one whereby the loss of time attendant upon the slowing up of a car when approaching one that is at rest is obviated through the improved signaling mechanism employed in connection with the guard. In attaining these ends it is to be understood that minor changes in the details of construction herein set forth may be resorted to without departing from the spirit of the invention.

Having thus described the invention, what is claimed is—

1. In a car safety-guard, the combination with a fixed member, of a relatively movable member adapted for movement to an obstructing or unobstructing position, and means for introducing a fluid under pressure between the members for moving the movable member to either of said positions.

2. In a car safety-guard, the combination with a movable cylinder adapted for movement to an obstructing or unobstructing position, of a relatively fixed piston-head disposed within the cylinder, and means for introducing a fluid under pressure upon opposite sides of the piston-head for moving the cylinder to either of said positions.

3. In a car safety-guard, the combination with a fixed member, of a relatively movable member adapted for movement to an obstructing or non-obstructing position, one of said members being tubular and the other having a head disposed within the tubular member, and means for introducing a fluid under pressure into the tubular member upon opposite sides of the head for moving the movable member to either of said positions.

4. In a car safety-guard, the combination with a movable cylinder adapted for movement to an obstructing or unobstructing position, of a relatively fixed piston-head disposed within the cylinder, a piston-rod connected to said head, and a pair of ducts leading through the rod and communicating with the cylinder respectively on opposite sides of the head.

5. In a car safety-guard, the combination with a cylinder, of a piston-head disposed within the latter, one of said members being movable relatively to the other to an obstructing or unobstructing position, a piston-rod connected to said head, a pair of ducts leading through the piston-rod and communicating with the cylinder respectively on opposite sides of the head, and means for admitting a fluid under pressure to either of said ducts.

6. In a car safety-guard, the combination with a cylinder, of a piston-head disposed within the cylinder, one of said members being movable relative to the other to an obstructing or unobstructing position, a piston-rod connected to said head, a pair of ducts leading through the piston-rod and communicating with the cylinder respectively on opposite sides of the head, a supply-tank containing a fluid under pressure, and means for establishing communication between the tank and either of the ducts at will.

7. The combination with a car, of a guard carried thereby and movable to an obstructing or unobstructing position, a signal, and means for moving the guard and simultaneously actuating the signal.

8. The combination with a car, of a guard adapted to be projected in the rear thereof, a signal disposed at the front of the car for notifying an approaching car of the position of the guard, and means for simultaneously projecting the guard and actuating the signal.

9. The combination with a car, of a movable guard adapted to project from the rear of the car, a signal including a movable target or shield disposed at the front of the car for notifying approaching cars of the position of the guard, and means for simultaneously supplying a fluid under pressure for actuating the guard and target.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES A. WILLARD.

Witnesses:
JOSEPHINE W. EWING,
FANNIE P. WILLARD.