

Dec. 27, 1927.

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C. L. COOK

CROSSING GUARD FOR RAILWAYS AND THE LIKE

Filed Sept. 22, 1925

2 Sheets-Sheet 1

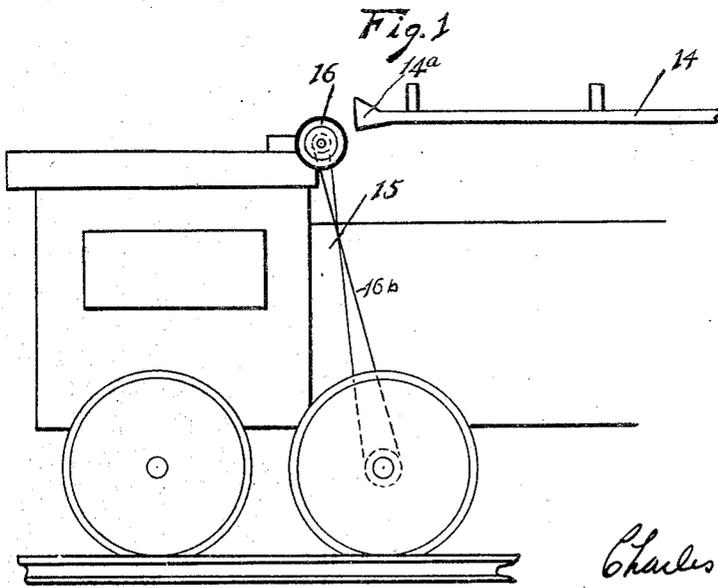
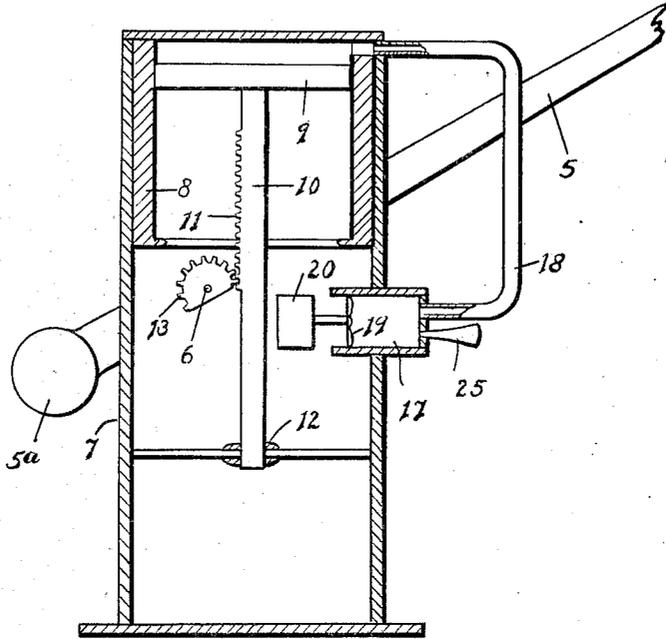


Fig. 2

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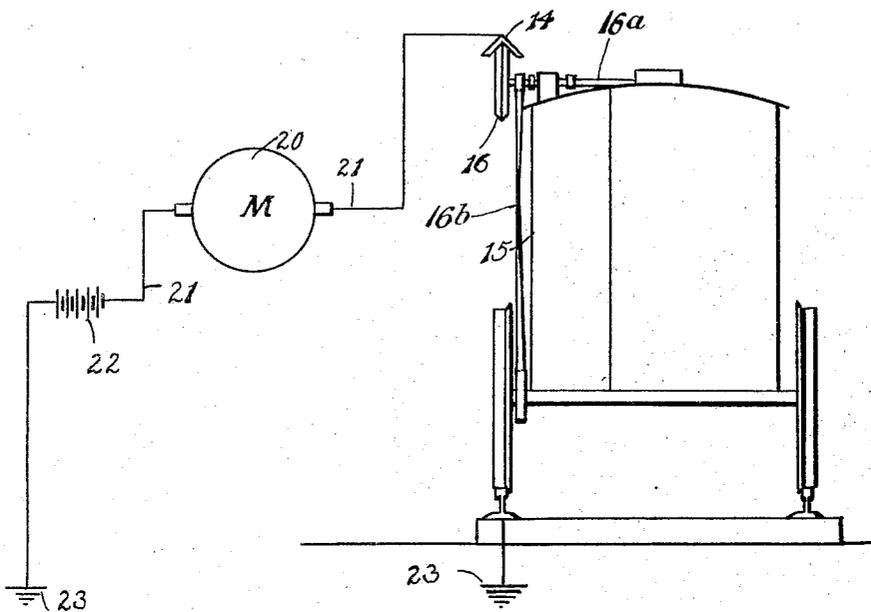


Fig. 3

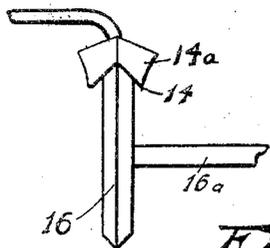


Fig. 4

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UNITED STATES PATENT OFFICE.

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CROSSING GUARD FOR RAILWAYS AND THE LIKE.

Application filed September 22, 1925. Serial No. 57,875.

The present invention relates to crossing guards for railways and the like, and the primary object is to provide mechanism of a novel and automatic character, whereby a gate will be caused to extend across a roadway at or adjacent to a crossing upon the approach of a train, the mechanism permitting the return of the gate to its inoperative or inactive position when the danger has passed the crossing.

In the accompanying drawings:

Figure 1 is a view in sectional elevation of the gate-operating mechanism,

Figure 2 is a view diagrammatic in its character, showing the control mechanism for the gate operating means,

Figure 3 is a diagrammatic view of an electric circuit, by which the gate-operating means is controlled.

Figure 4 is a detail sectional view showing the contact elements in end elevation.

In the embodiment disclosed the usual vertically swinging crossing gate is employed, and is designated 5. The gate is counterweighted, as shown at 5^a, and is pivoted, as shown at 6, to the outside of a casing 7, which is placed alongside the highway, as will be readily understood. In the upper portion of this casing is a cylinder member 8, within which is located a reciprocatory piston member 9. The piston member 9 has a vertical depending piston rod 10 that is provided on one side with a rack 11. This piston rod has its free end slidably guided, as shown at 12, in the lower portion of the casing 7. The rack 11 is in mesh with a gear 13 fixed to the pivot 6, to which the gate 5 is fast.

Alongside the track in advance of the crossing is suitably supported an elevated rail member 14, preferably angular in cross section, so as to form a shed against the elements, and having a flared receiving end 14^a. The locomotives or other parts of the trains that run upon the railway are provided with a coacting contact element. Thus a locomotive 15 is indicated in outline, and mounted thereon is a roller 16 having a tapered periphery that runs against the under side of the track element. Preferably this roller is carried by a shaft 16^a journaled on the locomotive and capable of limited play longitudinally so as to allow for the oscillation or side-lash of the locomotive. It is of course understood that the flared receiving mouth 14^a is ample to insure

the reception of the roller, irrespective of such lateral play as may occur on the part of the roller. Preferably also the perimeter speed of the wheel 16 is the same as that of the locomotive wheels. To insure this, suitable driving connections, indicated at 16^b, may be utilized between a driving wheel and the shaft 16^a for the purpose.

Suitably mounted in or on the casing 7 is a chamber 17 for fluid under pressure, and leading from this chamber is a conduit 18 that communicates with the upper end of the cylinder member 8 above the piston 9. A rotary fan blower 19 is located in the mouth of the chamber for delivering air thereinto, and this fan blower is operated by a suitable motor, indicated at 20. The motor 20 is in an electric circuit, indicated at 21 in Figure 3. This circuit includes a suitable source of electrical energy 22 and the rail contact element 14. The roller contact element 16 is also included in the circuit through grounds 23. Thus, as shown in Figure 3, when the contact elements 14 and 16 are in engagement the circuit is completed through the source of electrical energy 24 and the motor 20, as a consequence of which the motor is operated and the fan blower 19 is driven. The fluid pressure chamber 17 may also be in communication with a fluid operated signal in the form of a horn or other similar device, indicated at 25.

With this construction, the counterweight of the gate 5 is normally sufficient to hold said gate elevated with the piston member 9 in the upper portion of the cylinder member 8. When, however, a train approaches the crossing, the roller 16 will engage with the track 14, thus closing the circuit through the motor 20, as indicated in Figure 3. The result is that the fan blower is caused to operate, driving air into the chamber 17, where the pressure increases. This air or fluid under pressure passes through the conduit 18 to the upper end of the cylinder member 8, moving the piston downwardly, and thus through the rack and pinion gear 11-13, causing the gate 5 to lower. At the same time a portion of the air passes through the horn or signal 25, giving an alarm to approaching vehicles. When the roller 16 has passed beyond the rail 14, the circuit is broken, the motor 20 therefore stops and the counterweight will react to elevate the gate and the piston 9 to the position shown

in Figure 1, the air escaping through the conduit 18 and past the blower 19.

An effective crossing guard of an automatic character is thus provided, the operating fluid being relatively low, so that the gate moves slowly downwardly, and should it strike an obstruction, will stop without damage to the parts.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

What I claim, is:

1. In a crossing guard apparatus, the combination with a movable gate, of a gate operating motor, a pressure chamber having a conduit connection with the motor and also constantly open to atmosphere, a pump of sufficient capacity to supply motive fluid to the pressure chamber, in excess of that escaping to atmosphere, to actuate the gate operating motor, and mechanism for controlling the operation of the pump including roadside and car-carried mechanism.

2. In a crossing guard apparatus, the combination with a movable gate, of a gate operating motor, a pressure chamber having a conduit connection with the motor and also constantly open to atmosphere, a fluid operated signal actuated by fluid from the chamber, a pump for supplying fluid to the chamber to actuate the gate motor and signal, and mechanism for controlling the operation of the pump, including roadside and car-carried mechanism.

3. In a crossing guard apparatus, the combination with a movable gate, of a gate operating motor, a pressure chamber having a conduit connection with the motor, a fluid operated signal actuated by fluid from the chamber, said chamber being open to atmosphere

for permitting the escape of fluid when the motor stops, a pump of sufficient capacity to supply motive fluid, in excess of that escaping to atmosphere, to actuate the gate motor and signal, and mechanism for controlling the operation of the pump, including roadside and car-carried mechanism.

4. In crossing guard apparatus, the combination with a gate, of a fluid-actuated motor for operating the gate, an electrically operated fan blower for delivering fluid to the motor, and an electrical circuit including the fan motor, a contact rail along the track, and a contact car-carried element movable into and out of engagement with the rail.

5. In crossing guard apparatus, the combination with a pivoted crossing gate, of a fluid motor comprising a cylinder member and a piston member therein, one member being movable and geared to the gate, a fluid pressure chamber having communication with the cylinder member, a fan blower delivering into the chamber, an electric motor for operating the fan blower, and an electrical circuit including the fan motor, a contact rail along the track, and a contact car-carried element movable into and out of engagement with the rail.

6. In crossing guard apparatus, the combination with a pivoted crossing gate, of a fluid motor comprising a cylinder member and a piston member therein, one member being movable and geared to the gate, a fluid pressure chamber having communication with the cylinder member, a fan blower delivering into the chamber, an electric motor for operating the fan blower, an electrical circuit including the fan motor, a contact rail along the track and a contact car-carried element movable into and out of engagement with the rail, and a fluid-operated signal receiving fluid under pressure from the pressure chamber.

In testimony whereof, I affix my signature.

CHARLES LEE COOK.