Dec. 20, 1932. S. WENGER 1,891,739

AUTOMATIC RAILROAD CROSSING SIGNAL

Filed Dec. 18, 1931

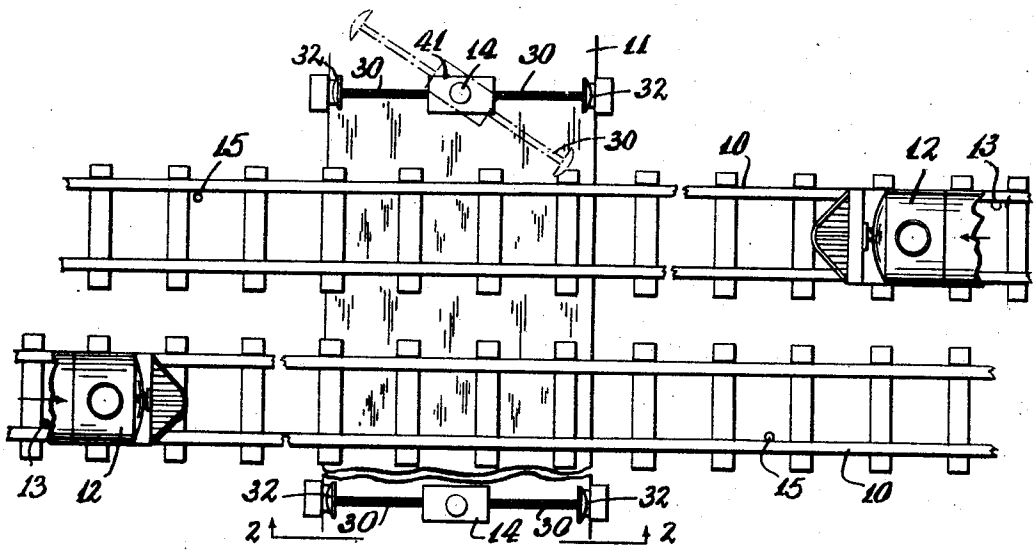


FIG. 1

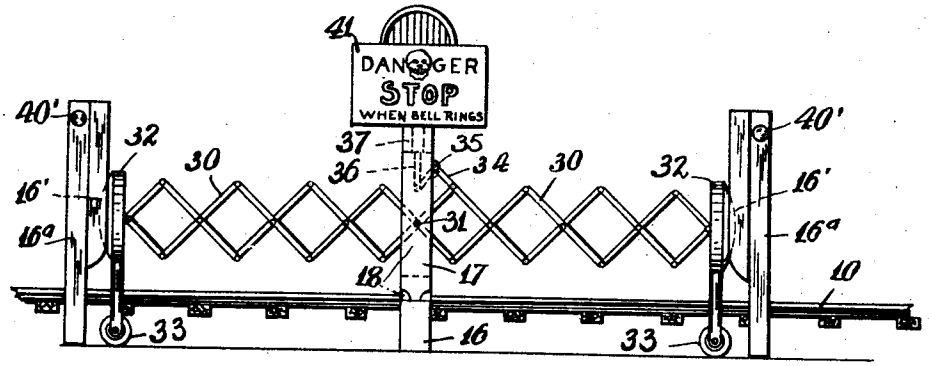


FIG. 2

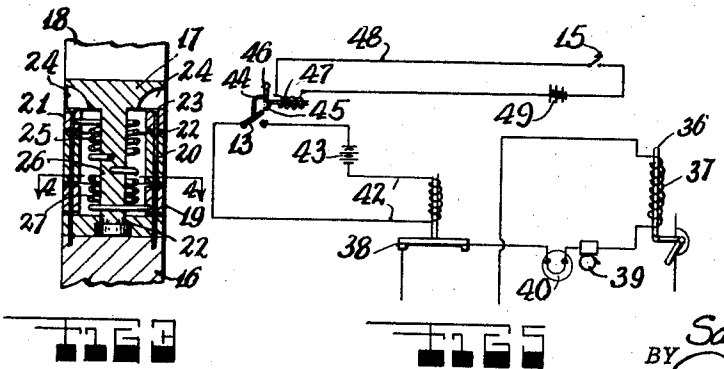


FIG. 3

FIG. 5

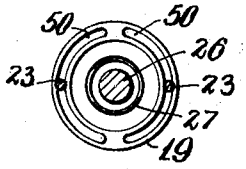


FIG. 4

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Patented Dec. 20, 1932 1,891,739

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AUTOMATIC RAILROAD CROSSING SIGNAL

Application filed December 18, 1931. Serial No. 581,833.

This invention relates to new and useful improvements in an automatic railway gate.

The invention has for an object the construction of an automatic railway gate which is characterized by the ability of automatically closing the cross road upon the approach of a train and automatically moving to the open position after the train has passed.

Particularly, it is proposed to arrange the gate in its extended position resiliently so that anyone caught upon the tracks may move it to get out.

A still further object of this invention is the construction of a device of the class described which is of simple, durable construction, dependable in use and efficient in operation and which can be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:—

Fig. 1 is a plan view of a portion of a railroad system shown at a crossing which is provided with automatic railway gates according to the invention.

Fig. 2 is an elevational view of Fig. 1.

Fig. 3 is a fragmentary sectional enlarged view of the post which supports the railway gate.

Fig. 4 is a horizontal view taken on the line 4—4 of Fig. 3.

Fig. 5 is a schematic wiring diagram of the device.

The reference numeral 10 indicates the rails of a railroad system which crosses a road 11. Trains 12 are shown approaching the crossing. Switches 13 are mounted upon the tracks some distance before the crossing and operable by the train to cause the closing of gates 14 on opposite sides of the railroad tracks and upon the cross road 11. Other switches 15 are arranged upon the tracks past the cross road for the purpose of releasing the switches 13 after the train has passed.

Each of the gates 14 comprises a stationary post section 16 attached upon the ground and rotatively supporting an upper post section 17. The upper section is formed with a hollow 18 extending completely through from side to side. Adjustable means is provided for resiliently holding the rotative section 17 in a pre-determined position of rotation. This means comprises collars 19, 20, and 21 interposed between the stationary section 16 and the rotatable section 17. These collars have interengaging teeth 22 adapted to hold them in various fixed positions of rotation under the pressure of bolts 23 extending through the collars and into the stationary post portion 16. Recesses 24 are cut in the rotative post portion 17 so that the heads of the bolts may be reached. A spring 25 encircles a reduced portion 26 of the rotative section 17 and has one of its ends attached upon the collar 21 and its other end upon the section 26. A second spring 27 is coaxially arranged upon the reduced portion 26 and has one end connected on the reduced portion 26 and its other end upon the collar 19.

The springs are so arranged that they oppose each other, that is one tends to turn the rotative section 17 in one direction and the other tends to turn section 17 in the other direction. Thus the rotative portion 17 will assume a stationary position under resilient action so that it may be turned either in one direction or the other.

A lazy tongs structure 30 is extended through the hollow 18 and is pivotally supported at 31 upon the rotative post section 17. Cushion members 32 are mounted upon the extended ends of the lazy tongs sections and are supported by casters 33 resting upon the ground. A means is provided for extending and retracting the lazy tongs structure and consists of a bell crank 34 connected with one of the members of the lazy tongs structure and pivotally supported intermediately at 35 upon the post section. The other end of the bell crank connects with the core 36 of a solenoid 37.

The solenoid 37 is in a circuit which includes a relay switch 38. This circuit also includes an alarm 39 and a warning light 40.

The alarm and light preferably should be housed within the head portion 41 mounted on the top of the post section 17. This head portion may have danger signals inscribed or mounted thereon.

The relay 38 is operated by a circuit 42 which includes a battery 43 and the switch 13. A catch 44 is connected with the switch 13 for the purpose of holding it closed when the train runs over it. This catch is engageable within a hook element 45 upon a lever 36 which is pivotally supported and connected with an electromagnet 47 in a circuit 48 which includes a source of power 49 and the switch 15.

Cushion members 32 abut against the cavities 16′ in side posts 16^a when the gates are closed. The side posts 16^a are provided with suitable signal lamps 40′.

The bolts 23 are rigidly engaged within the stationary post section 16. The portions of the bolts which pass through the collars 19, 20 and 21 extend through arcuate slots 50 in the collars to allow relative adjustments of the collars as before pointed out.

The operation of the device may be traced by assuming the train 12 in the act of closing the switch 13. Thereupon, the circuit will be closed through the relay 38 which closes the circuit including a solenoid 37 so that the core 36 is moved and causes movement of the bell crank to extend the lazy tongs construction 30. Thus the gate is moved to the position where it closes the cross road 11. Should anybody be hit as the lazy tongs are extended, no damage will be done in that cushions 32 are mounted upon the ends of the lazy tongs structure. As the train leaves the cross road it will normally close the switch 15 which will energize the electromagnet 47 and release the switch 13 which thereupon opens and breaks the circuit through the relay with a consequent break of circuit through the solenoid 37. Thereupon the core of the solenoid which is of the spring operated type moves back to its original position and retracts the lazy tongs structure 30. The resilient construction of the rotatable post section 17 may be adjusted so that the lazy tongs structure opens transversely across the road 11 as shown in full lines on the drawing, or may be adjusted so that they open at an angle to the true transverse position. The dot and dash lines in Fig. 1 show an inclined opening.

This arrangement leaves room at the edges of the road so that persons cannot be entrapped and may walk off upon seeing the gate close the road. Simultaneously with the closing of the gate the alarm 39 will operate and the warning light will be illuminated. The angular adjustment of the post section 17 is accomplished by loosening the bolt 23 and turning the collars 19 and 21 or either of these collars so as to change the relation of operation of the springs 25 and 26 to obtain the neutral position desired.

While I have shown and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

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

1. An automatic railway gate, comprising a stationary post, a rotatable section thereon and having a hollow extending from one side to the other, adjustable means for resiliently holding said rotative section in a pre-determined stationary position, a lazy tongs structure mounted within the hollow of the rotatable post section and extendible from opposite sides thereof, cushioned members on the ends of said lazy tongs structure, and means for extending and retracting said lazy tongs structure comprising a bell crank connected with one of the links of the lazy tongs structure, a solenoid connected with said bell crank, and circuits including said solenoid, a switch on the track to cause operation of the solenoid, and a switch on the track past the first mentioned switch to cause de-energization of the solenoid.

2. An automatic railway gate, comprising a stationary post, a rotatable section thereon and having a hollow extending from one side to the other, adjustable means for resiliently holding said rotative section in a pre-determined stationary position, a lazy tongs structure mounted within the hollow of the rotatable post section and extendible from opposite sides thereof, cushioned members on the ends of said lazy tongs structure, and means for extending and retracting said lazy tongs structure comprising a bell crank connected with one of the links of the lazy tongs structure, a solenoid connected with said bell crank, and circuits including said solenoid, a switch on the track to cause operation of the solenoid, and a switch on the track to cause deenergization of the solenoid, casters being mounted on bottom of said cushion members to act against the ground and support the lazy tongs structure.

3. An automatic railway gate, comprising a stationary post, a rotatable section thereon and having a hollow extending from one side to the other, adjustable means for resiliently holding said rotative section in a pre-determined stationary position, a lazy tongs structure mounted within the hollow of the rotatable post section and extendible from opposite sides thereof, cushioned members on the ends of said lazy tongs structure and means for extending and retracting said lazy tongs structure comprising a bell crank connected with one of the links of the lazy tongs

structure, a solenoid connected with said bell crank, and circuits including said solenoid, a switch on the track to cause operation of the solenoid, and a switch on the track past the first mentioned switch to cause de-energization of the solenoid, the rotatable post section supporting an alarm and a signal lamp in the same circuit with said solenoid.

4. An automatic railway gate, comprising a stationary post, a rotatable section thereon and having a hollow extending from one side to the other, adjustable means for resiliently holding said rotative section in a pre-determined stationary position, a lazy tongs structure mounted within the hollow of the rotatable post section and extendible from opposite sides thereof, cushioned members on the ends of said lazy tongs structure and means for extending and retracting said lazy tongs structure comprising a bell crank connected with one of the links of the lazy tongs structure, a solenoid connected with said bell crank, and circuits including said solenoid, a switch on the track to cause operation of the solenoid, and a switch on the track past the first mentioned switch to cause de-energization of the solenoid, said lazy tongs structure being supported intermediately within said hollow.

5. An automatic railway gate, comprising a stationary post, a rotatable section thereon and having a hollow extending from one side to the other, adjustable means for resiliently holding said rotative section in a pre-determined stationary position, a lazy tongs structure mounted within the hollow of the rotatable post section and extendible from opposite sides thereof, cushioned members on the ends of said lazy tongs structure and means for extending and retracting said lazy tongs structure comprising a bell crank connected with one of the links of the lazy tongs structure, a solenoid connected with said bell crank, and circuits including said solenoid, a switch on the track to cause operation of the solenoid, and a switch on the track to cause de-energization of the solenoid, said means for adjusting the resiliency of the rotative post section comprising adjustable resilient members tending to urge the post sections in opposite directions.

6. An automatic railway gate, comprising a stationary post, a rotatable section thereon and having a hollow extending from one side to the other, adjustable means for resiliently holding said rotative section in a pre-determined stationary position, a lazy tongs structure mounted within the hollow of the rotatable post section and extendible from opposite sides thereof, cushioned members on the ends of said lazy tongs structure and means for extending and retracting said lazy tongs structure comprising a bell crank connected with one of the links of the lazy tongs structure, a solenoid connected with said bell crank, and circuits including said solenoid, a switch on the track to cause operation of the solenoid, and a switch on the track to cause de-energization of the solenoid, said means for adjusting the resiliency of the rotative post section comprising adjustable resilient members tending to urge the post sections in opposite directions, comprising springs connected between the rotative post section and adjustable stationary cores.

7. An automatic railway gate, comprising a stationary post, a rotatable section thereon and having a hollow extending from one side to the other, adjustable means for resiliently holding said rotative section in a pre-determined stationary position, a lazy tongs structure mounted within the hollow of the rotatable post section and extendible from opposite sides thereof, cushioned members on the ends of said lazy tongs structure and means for extending and retracting said lazy tongs structure comprising a bell crank connected with one of the links of the lazy tongs structure, a solenoid connected with said bell crank, and circuits including said solenoid, a switch on the track to cause operation of the solenoid, and a second switch on the track past the first mentioned switch to cause de-energization of the solenoid, said second switch being in a circuit including an electromagnet for operating a release of the second switch controlling said circuit for operating the solenoid controlling said bell crank.

In testimony whereof I have affixed my signature.

SAMUEL WENGER.