

(No Model.)

3 Sheets—Sheet 1.

# C. L. ZUELKE. RAILROAD GUARD GATE.

No. 556,797.

Patented Mar. 24, 1896.

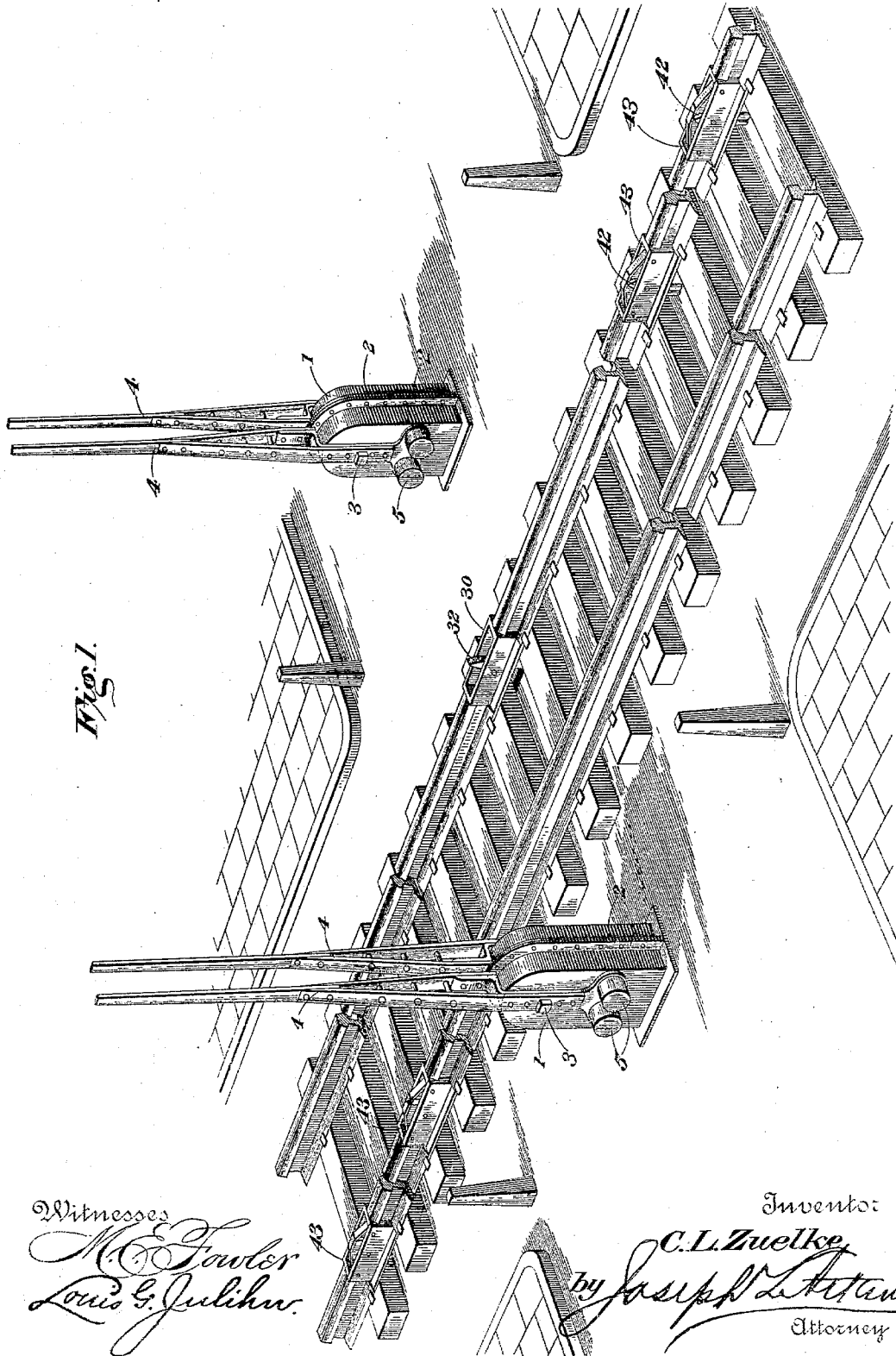


Fig. 1.

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Fig. II.

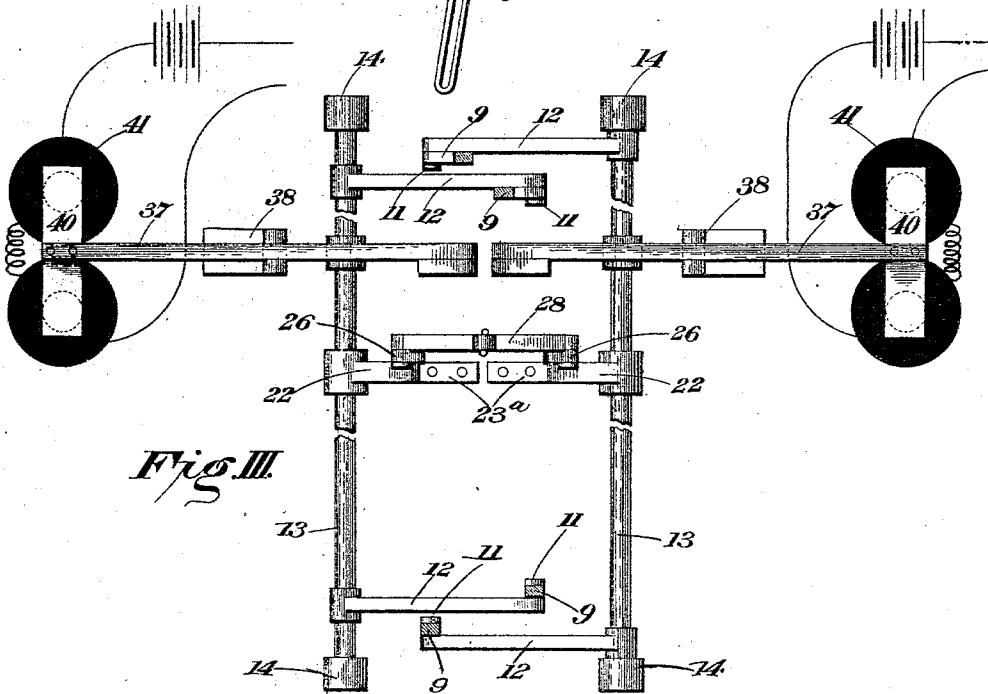
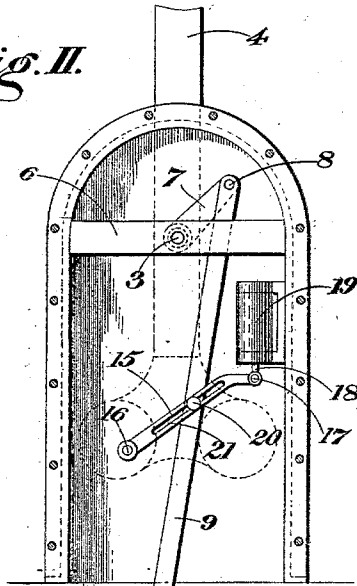


Fig. III.

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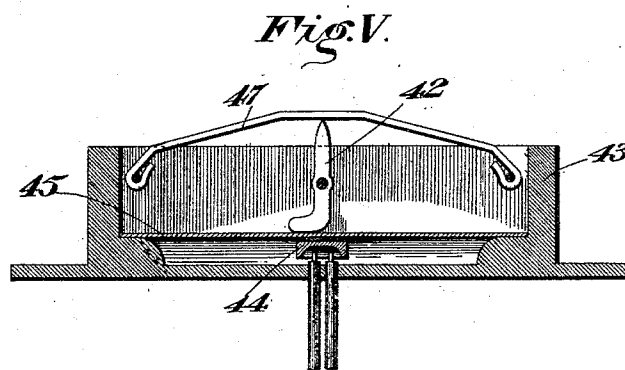
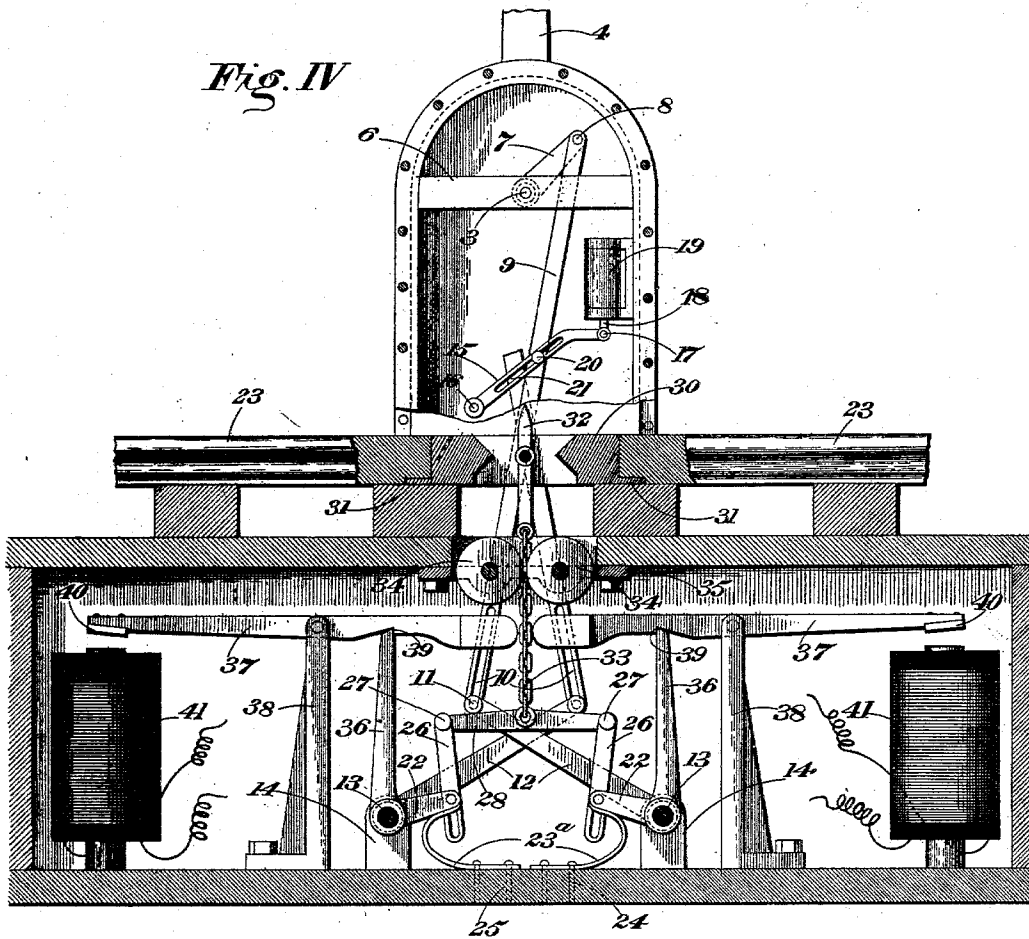
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3 Sheets—Sheet 3.

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# UNITED STATES PATENT OFFICE.

CHARLES L. ZUELKE, OF FURNESSVILLE, INDIANA.

## RAILROAD GUARD-GATE.

SPECIFICATION forming part of Letters Patent No. 556,797, dated March 24, 1896.

Application filed October 15, 1894. Serial No. 525,942. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES L. ZUELKE, of Furnessville, county of Porter, State of Indiana, have invented certain new and useful Improvements in Railroad Guard-Gates, of which the following is a specification, reference being had to the accompanying drawings.

The object of my invention is to produce an improved device for guarding railroad-crossings by which gates or barriers will be automatically thrown across the street or road upon the approach of a train with such an interval of movement between the gates on the opposite side of the railroad that the gates guarding the approach to the track will be first lowered and afterward those guarding the opposite side of the track, thereby avoiding the danger of barricading any one between the gates upon the track.

In the accompanying drawings, Figure I is a perspective view of a track and road with my gates in position. Fig. II is a view of one-half of the gate-stand with the operating mechanism exposed. Fig. III is a plan view of the spring gate-actuating mechanism and relative parts. Fig. IV is a section showing the gate-actuating mechanism and trip mechanism in position. Fig. V is a detail view of one of the switch-blocks.

Referring to the figures on the drawings, 1 indicates a stand-cover, which is preferably made of metal in halves, provided with side ribs 2, by which the halves may be bolted together to form a neat covering and stable support.

3 indicates a shaft carried in suitable bearings in the stand and provided on its ends with suitable gates 4, having counterweights 5 sufficient to hold them, respectively, in the elevated or open position.

The shaft 3 is carried upon a suitable support—as, for example, that indicated by 6—and to the shaft within the stand-cover is firmly secured a lever 7, to which, as indicated at 8, is pivoted a pitman 9, that at its opposite ends is provided with a slot 10.

11 indicates a pin which is adapted to move in the slot for the purpose of actuating the pitman by its movement in one direction (which is in practice downwardly) and not to actuate it by its movement in the opposite

direction. This pin is secured to a lever 12, which is fastened by suitable means to a transverse shaft 13 carried in suitable bearings 14. The shaft 13 is designed to operate the pitman 9 through the lever 12, depressing the former and thereby causing the gates 4 to close against the gravity of the counterweights 5. The action of the lever 12 would be in practice abrupt, and for that purpose I prefer to employ suitable cushioning mechanism to prevent the too rapid movement of the gates. This may consist, for example, of a bent lever 15 pivoted, as indicated at 16, to the stand-cover, and at the opposite end, as indicated at 17, to an air-cushion plunger 18 carried in the case 19. A pin 20, secured to the pitman 9, moves in a slot 21 in the bent lever 15 and yieldingly subjects the movement of the pitman to the restraining influence of the air-cushion. The yielding resistance afforded by the air-cushion may be supplied by various well-known forms of mechanism and may be applied to the gate-actuating mechanism at different points; but the mechanism suggested and the place of application I now consider preferable.

Returning to the shaft 13, 22 indicates a lever secured to said shaft almost directly under the track-rails 23. The shaft 13 is spring-actuated, so as to produce a constant tendency in the lever 12 to draw the pitman 9 downwardly and so close the gate with which it is connected. This spring-actuation may be conveniently supplied by a spring 23<sup>a</sup>—as, for instance, the strap-spring illustrated—secured, as by bolts 24, to a permanent base 25 at one end and at the other end to the lever 22.

26 indicates a slotted pitman loosely pivoted at one end to the extremity of the lever 22 and at the other, as indicated at 27, to a cross-piece 28.

The shaft 13 and its connected mechanism are shown duplicated and the description of one set applies equally to the other. The cross-piece 28, however, is pivotally united at opposite ends to the slotted pitmen 26 and is designed to be actuated by one or the other of them, as may be required.

30 indicates a slotted block, preferably provided with lips 31 secured under the ends of the rails 23 to hold it firmly in place. Within it is carried a tilting lever 32, projecting be-

yond its upper surface and designed to be actuated in either direction by the passing wheels of a locomotive. The tilting lever is fastened at one end to a connecting-piece 33—  
 5 as, for example, a chain that is fastened at its other end to the cross-piece 28. This connecting-piece passes between a pair of guide-pulleys 34, carried in suitable supports 35. The office of the guide-pulleys is to direct the  
 10 tension created by the tilting of the lever 32 vertically to the cross-piece.

It will be perceived from the foregoing description that while the shaft 13 may be raised by the tilting lever 32 it will, without special  
 15 provision, be immediately restored to the starting position by the action of its spring 23. I therefore employ suitable setting or retaining mechanism for holding the power of the spring in abeyance in connection with  
 20 suitable releasing mechanism to be actuated as occasion may require.

The retaining mechanism which I now prefer to employ consists of a lever 36, secured to each of the shafts 13 and moving in the  
 25 path of a catch-lever 37, pivoted, for example, to a standard 38. The catch-lever is counter-balanced so as to hang toward the retaining-lever 36, which also acts to limit its movement in that direction. The catch-lever is provided  
 30 with a detent 39, which, when the retaining-lever 36 is sufficiently turned by the rotation of the shaft 13, engages the end of the lever 36 and prevents backward rotation of the shaft 13. It should be observed that in this  
 35 position the lever 12 has been likewise elevated, the movement of its pin 11 being unimpeded by the reason of its working in the slot 10. When the lever 12 is elevated, the pitman 9, being released from its control, allows the gate that it actuates to assume an upright or open position by reason of the gravity of its counterweight 5.

It is requisite for the complete operation of my device to provide suitable automatic releasing mechanism for liberating it when  
 45 necessary from the catch-lever 37. For this purpose I prefer to employ an armature 40 on the end of the catch-lever, located over an electromagnet 41, wired to a source of electrical supply (not illustrated) and to a circuit-closing lever 42 pivoted to a suitable support  
 50 43 underneath the rail 23 at a required distance from the crossing. This, by the wheel of a passing locomotive, is adapted to be swung in either direction upon its pivot. In one direction it forms a contact with the switch-plate 44 and completes the circuit; but in the other direction it merely swings out of the way without forming contact. Springs 45 serve to support the switch-block yieldingly in an upright  
 55 position. A non-conductive plate 46 prevents completion of the electric circuit except by tilting the circuit-closing lever 42. It will be perceived from this description that when  
 60 the lever is swung in one direction and the magnet is electrified the lever 36 is released to close the gates in the manner above de-

scribed. When swung in the other direction, it has no effect upon the magnet and does not therefore operate the gates.

For the purpose of protecting the circuit-closing lever and preventing its operation when a hand-car, tricycle, or light vehicle, for example, is passing over it I provide spring guard-plates 47 or the like loosely connected  
 75 to the track or its support sufficient to support the weight of a light car or truck, but adapted to yield under a required weight, as of a locomotive or coach. Two such levers may be provided at such a distance from each other  
 80 as to allow one set of gates to close a considerable length of time previous to the closing of the other set of gates, thereby preventing the barricading of a vehicle between the gates, as above suggested. One circuit-closing lever  
 85 is connected with one set of gates and operating mechanism and the other with the other set. Circuit-closing levers are provided upon opposite sides of the gates, so that the gates may be operated by an incoming train from  
 90 either side.

It will be perceived that inasmuch as certain kinds of cars are not intended to actuate the spring-releasing mechanism the tilting lever 32 may frequently be tilted without  
 95 having any work to do, the shaft 13 being previously set and not released by the passage of the car which tilts the lever. For this reason the pitmen 26 are slotted, as described, and when the shafts 13 are already set the  
 100 pitmen 26 move without resistance.

What I claim is—

1. The combination with a gate, of spring mechanism for closing the gate, trip mechanism for holding the spring mechanism in abeyance  
 105 and for tripping the same, and spring resetting mechanism for relieving the gate from the influence of the spring mechanism, and counterweights upon the gate adapted to restore it to its proper position after the actuation of the spring resetting mechanism, substantially as specified.

2. The combination with a gate, gate-actuating mechanism and trip mechanism including an electrically-actuated catch-lever  
 115 designed to be actuated to trip the gate-actuating mechanism, and resetting mechanism adapted to be actuated by a train to reset the gate-actuating mechanism and trip mechanism, and a counterweight upon the gate designed to raise the same after the gate-actuating mechanism has been reset, substantially as specified.

3. The combination with a gate, of a shaft, a spring urging the shaft in one direction,  
 125 mechanism operatively connecting the shaft and gate, mechanism for rotating the shaft in opposition to the spring, and trip mechanism for sustaining the shaft in opposition to the spring and for releasing the same to allow it  
 130 to be rotated by said spring, substantially as specified.

4. The combination with a gate, of a spring-actuated shaft operatively connected thereto

and provided with a retaining-lever, an electrically-actuated catch-lever in operative relation with the retaining-lever, and resetting mechanism for rotating the shaft in opposition to the spring and for engaging the retaining-lever with the catch-lever, substantially as specified.

5. The combination with a gate, of a slotted pitman operatively connected therewith, a spring-actuated shaft, and lever on said shaft provided with a pin engaging the slot in the pitman, mechanism for rotating the shaft in one direction, resetting mechanism for rotating the shaft in the opposite direction, a retaining-lever carried by the shaft, and a catch-lever in operative relation with the retaining-lever, substantially as specified.

6. The combination with a gate and a slotted pitman, of a shaft spring-actuated in one direction, a lever carried by said shaft and provided with a pin engaging the slot in the pitman, a retaining-lever, and a lever 22 carried by the shaft, a pitman 26 operatively connected to the retaining-lever and to the lever 22 respectively, a tilting lever operatively connected with the pitman 26, and a catch-lever in operative relation with the retaining-lever, substantially as specified.

7. The combination with a gate, pitman 9, lever 12 and shaft 13, of a tilting lever operatively connected with the shaft, substantially as specified.

8. The combination with a gate and shaft 13 operatively connected with the gate, of a lever 22 on the shaft, mechanism for actuating the shaft in one direction, and a tilting lever in proximity to the tracks and operatively connected with the lever 22, substantially as specified.

9. The combination with a gate and shaft

operatively connected thereto, of a lever 22 upon the shaft, a slotted pitman 26, a tilting lever, and a flexible piece between the pitman 26 and the tilting lever, substantially as specified.

10. The combination with a gate, and slotted pitman 9, of a shaft carrying a retaining-lever, a lever 12 provided with a pin engaging the slot of the slotted pitman, and a lever 22 spring-actuated in one direction, a catch-lever, a slotted pitman 26, tilting lever 32 operatively connected with the slotted pitman 26, and electrically-actuated trip mechanism for tripping the catch-lever, substantially as specified.

11. The combination with a gate, of a pair of shafts 13 provided, respectively, with levers 12, 36 and 22, a pair of pitmen 29 operatively connected with the gate and with the levers 12, respectively, pitmen 26 operatively connected with the levers 22, a cross-piece 28 connecting the pitmen 26, a tilting lever 32, and a flexible piece 33 intermediate of the tilting lever and cross-piece, catch-levers in operative proximity to the levers 36, and means for actuating the catch-levers, substantially as specified.

12. The combination with a gate, of a pitman constituting a part of gate-actuating mechanism and provided with a pin, a pneumatic cushion, and a slotted lever 15 operatively connected with the cushion and with the pin upon the pitman, substantially as specified.

In testimony of all which I have hereunto subscribed my name.

CHARLES L. ZUELKE.

Witnesses:

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