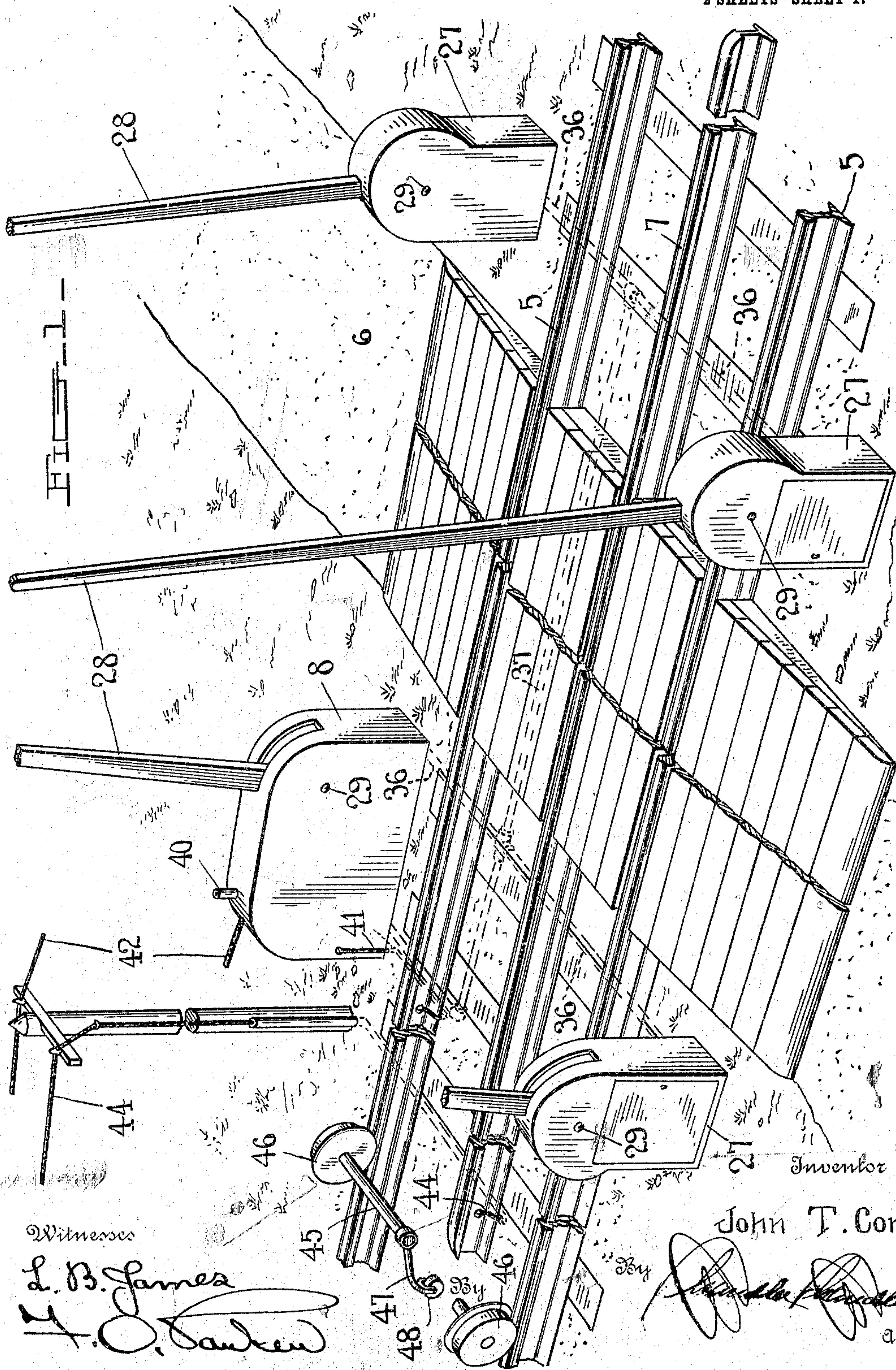


957,868.

Patented May 17, 1910.

2 SHEETS—SHEET 1.



Witnesses

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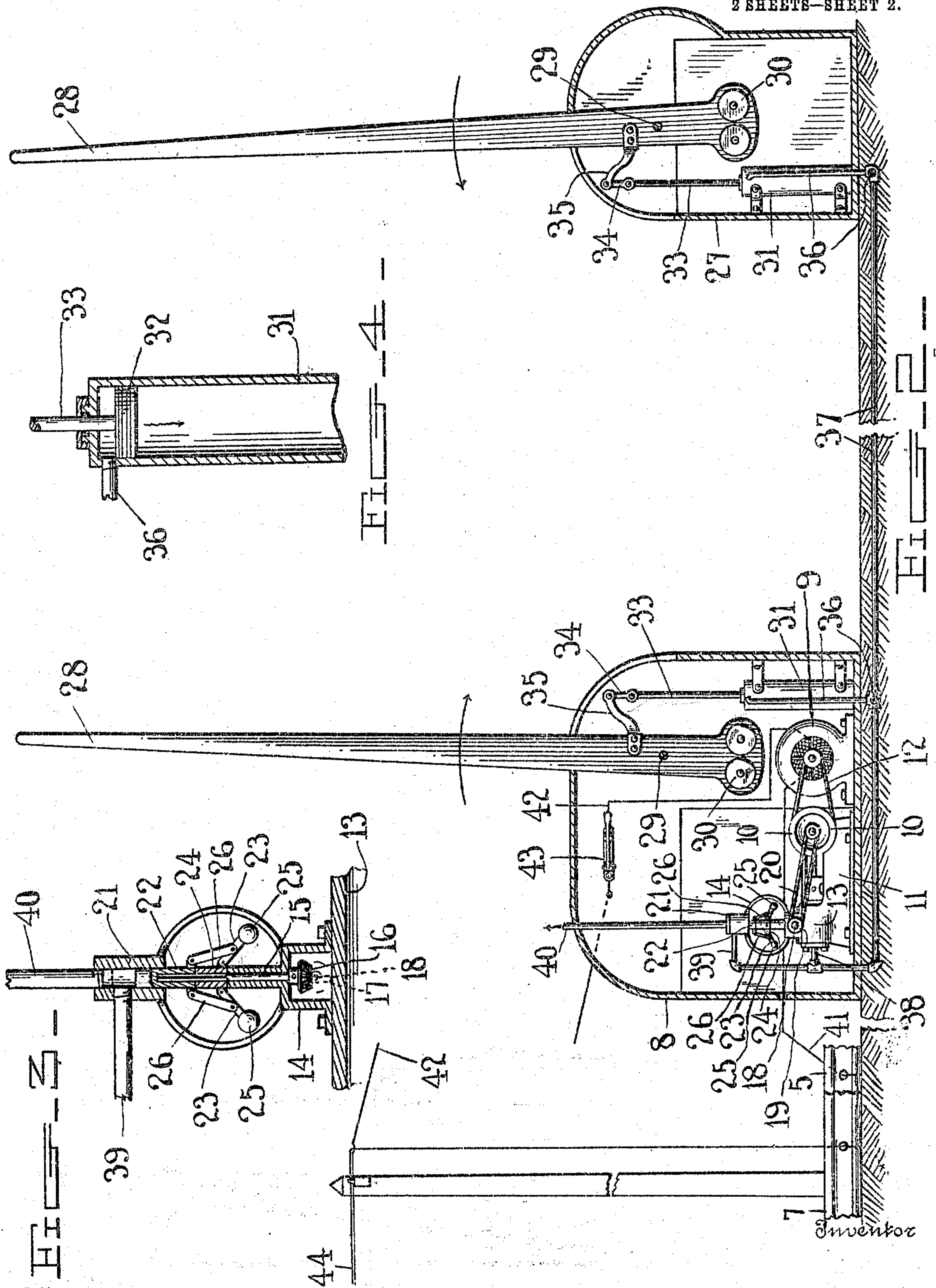
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2 SHEETS—SHEET 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN T. CORRIGAN, OF ROCKFORD, ILLINOIS.

RAILROAD-GATE.

957,868.

Specification of Letters Patent.

Patented May 17, 1910.

Application filed October 4, 1909. Serial No. 520,890.

To all whom it may concern:

Be it known that I, JOHN T. CORRIGAN, a citizen of the United States, residing at Rockford, in the county of Winnebago, State of Illinois, have invented certain new and useful Improvements in Railroad-Gates; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to railway gates and more particularly to the class of electro mechanical closing mechanism for railway gates.

The primary object of the invention is the provision of mechanism of this character in which railway crossing gates will be under the control of a moving train so that upon the approach of the train to the crossing the gates will be automatically lowered until the train has passed over the crossing when the said gates will be subsequently opened to permit vehicles to pass over the trackway and in this manner vehicles and pedestrians will be protected from accidental injury or danger of being run over by passing trains.

Another object of the invention is the provision of mechanism of this character in which railway crossing gates will be actuated by a moving train when approaching and subsequently leaving a road way crossing intersecting the track bed, thus doing away with the necessity of a signalman or gatesman being stationed at the crossing for the purpose of protecting pedestrians and moving vehicles at the point of intersection of the track bed with the road way.

A further object of the invention is the provision of mechanism which is simple in construction, thoroughly reliable and efficient in operation and inexpensive to manufacture.

In the drawings accompanying and forming part of this specification is illustrated the preferred form of embodiment of the invention which to enable those skilled in the art to carry the invention into practice will be set forth at length in the following description while the novelty of the invention will be pointed out in the claims succeeding the description.

In the drawings:—Figure 1 is a fragmentary perspective view of a railway track and road-crossing with the gate and operat-

ing mechanism in position relative thereto.

Fig. 2 is a fragmentary vertical sectional view through a pair of gate boxes at one side of the railway track showing in detail a portion of the gate operating mechanism. Fig. 3 is a fragmentary vertical sectional view on an enlarged scale through the governor valve mechanism. Fig. 4 is a vertical sectional view through one of the air cylinders controlling the gate.

Similar reference characters indicate corresponding parts throughout several views in the drawings.

Referring to the drawings by numerals, 5 designates generally a railway track, the same being intersected by a road-way 6 and between the rails of this track is mounted and adapted to extend longitudinally therewith beyond opposite sides of the road-way 6, an electro current carrying rail 7, the purpose of which will be hereinafter described.

To one side of the track 5 adjacent the road way 6 is a gate box 8 within which is disposed an electro motor 9, the latter operating the fly-wheel 10 of an air pump 11 through the medium of a belt 12 passed over said fly-wheel and this air pump 11 is of the usual type which is also located within the gate box 8 and is provided with the usual air compressing cylinder 12 having mounted thereon a suitable casting forming a housing 14 for a rotatable vertical governor shaft 15, the latter carrying at its lower end a beveled gear 16 meshing with a beveled pinion 17 mounted upon a horizontal stud shaft 18 carrying a pulley 19 over which is trained a belt 20, the latter being driven by the fly-wheel 10 of the pump. The housing 14 at its upper end is formed with a valve chest 21 in which works a vertically slidable valve 22, the latter supported and guided by the governor shaft 15 and this valve 22 is moved in the valve chest 21 by means of an inertia ball governor, the same comprising pivotal arms 23 carried by a collar 24 fixed to the governor shaft 15 and these arms 23 have outer weighted ball terminals 25. Pivotaly connected to said arms 23 are links 26, the latter also pivotaly connected to the valve 22 working in the valve chest.

Disposed on opposite sides of the road-way 6 and also the track 5 are gate boxes 27, the same supporting swinging gate beams 28, which latter are mounted within the boxes on pivot rods 29 and these arms carry at their inner ends the usual weights 30

which latter serve to swing the gate beams to vertical position. Within the gate box 8 is also mounted a gate beam 28, which latter is journaled on a pivot rod 29 and carries at its inner end the weights 30 and this gate beam is identical with the other gate beams mentioned.

Suitably mounted within the gate boxes 8 and 27 are air receiving cylinders 31, in which are adapted to work piston heads 32 carried by piston rods 33, the latter having link connections 34 with crank arms 35 secured to the gate beams 28 above their pivot points 29 and in communication with the air cylinders 31, near their upper ends, are branch air supply pipes 36, which latter also have communication with a main air supply pipe 37 suitably embedded in the track way and this main air pipe 37 communicates as at 38 with the air compressing cylinder 13 of the pump so that air from the said cylinder will be conveyed through the main air pipe 37 and thence through the branch air pipe 36 to the air cylinders 31 for actuating the pistons 32 working therein to lower the gate beams 28 in horizontal position.

Between the main air supply pipe 37 and the valve chest 21 is an air exhaust pipe 39, the communication of which is controlled by the valve 22 working in the valve chest. Leading from the top of the valve chest 21 is an exhaust pipe 40, which is passed through the top of the gate box 8 and establishes communication between the pipe 39 and the atmosphere.

Between one of the rails of the track 5 and the motor 9 is an electric conductor wire 41 and also leading from the motor 9 is an electric conductor wire 42, the same being intersected by the usual cut-off switch 43 located within the box 8 and this wire 42 has connection with and receives its current from any suitable source of electric current (not shown).

Connected to the current carrying rail 7 centrally of the track rails is an electric current wire 44, the latter also having connection with the source of electric current. It is obvious that the circuit normally remains open. There is shown in Fig. 1 the front axle 45 of a car truck having the usual car wheels 46 adapted to travel upon the rails of the track 5 and upon this axle 45 is carried an arm 47 supporting a contact roller 48 for engagement with the current carrying rail 7 between the rails of the tracks.

It is obvious that the circuit is closed when the contact wheel 48 engages the current carrying rail whereby the current will be bridged from said rail 7 to the rail of the track 5 to which the electric conductor wire 41 is connected and when the said circuit is closed in this manner it will operate the motor 9, which latter actuates the air pump.

In operation presuming the gate beams

28 are in normal vertical position when a passing train approaches the road-way 6 its contact roller 48 will engage the current carrying rail 7 and in this manner the electric circuit is closed so as to set in motion the motor 9 which operates the pump 11 and while this latter pump is being operated it will supply air to the main air supply pipe 37 and thence to the branch air pipes 36 and finally into the air cylinders 31. As the air enters the cylinder 31 it will force downward the piston 32 and through the medium of the piston rods 33 the gate beams will be lowered to horizontal position. It being understood of course that the air pump when operating will shift the ball governor so as to move the valve 22 in a position in the valve chest 21 to close the communication of the exhaust pipes 39 and 41 and thus prevent the escape of air from the main air pipe, while the gate beams are in lowered horizontal position.

After the system has been closed and the motor continues to operate the latter will slow down, on account of the pressure, to a sufficient degree of speed to effect the lowering of the governor arms thereby moving the valve 22, in its chest 21, to a position so that the exhaust pipe 40, will have communication with the exhaust pipe 39, which will be only partially opened to the said chest 21, in which the valve 22, works so that in this manner the building up of the pressure will be obviated without permitting the gates to assume an open position until the motor has stopped whereupon the gates will automatically open the intersecting crossing over the track.

Assuming that the train has passed the road-way 6 and that the contact wheel 48 has left the current carrying rail 7 which instantly breaks the circuit and in this manner the motor 9 is stopped and also the air pump. When the air pump ceases operating the ball governor will by gravity lower so as to move the valve 22 in a position in the valve chest 21 so as to establish communication between the exhaust pipes 39 and 40 and in this manner air is exhausted from the air cylinder 31 to the atmosphere, thus permitting the weights 30 on the gate beams 28 to bring the said gate beams into normal vertical position whereupon the road-way 6 will be opened across the track-way.

It is thought from the foregoing the construction and operation of the invention will be readily apparent, without the necessity of a more extended description and therefore the same has been omitted.

What is claimed is:—

1. The combination with railway gates of fluid supply means closing said gates, an electric motor controlling the fluid supply means, a governor controlled means operative upon the stopping of the motor to per-

mit the exhaust of the fluid from the fluid supply means for the opening of the gates, and a train controlled electric circuit for actuating said motor.

5 2. The combination with a railway gate, of fluid supply means closing said gate, an electric motor controlling the fluid supply means and a governor controlled means operative upon the stopping of the motor to
10 permit the exhaust of the fluid from the fluid supply means for the opening of the gates.

3. The combination with a plurality of railway gates, fluid operating pumps for
15 moving said gates, pipes establishing communication between all of the said pumps, and fluid supply means communicating with said pipes, a motor controlling the fluid supply means, a train controlled electric circuit
20 actuating said motor and governor controlled means operative upon the stopping of the motor to permit the exhaust of the fluid from the fluid supply means for the opening of the gates.

25 4. The combination with opposed railway gates, fluid controlled pumps operating said gates, pipe connections between the pumps, motor controlled fluid supply means having communication with said pumps through
30 said pipes, atmospheric exhaust means communicating with the fluid supply means, and a governor controlled valve operative

upon the stopping of the motor controlling the fluid supply means for regulating the atmospheric exhaust means. 35

5. The combination with a gate, of a pump having connection with the gate for raising and lowering the same, means for supplying fluid to the pumps for closing the gate, a motor operating said means, train
40 controlled means actuating the motor, a fluid exhaust means leading from said first named means, a valve controlling the said fluid exhaust means, and a governor closing the valve when the motor is actuated and also
45 opening it when the motor has been stopped.

6. The combination with a gate, of a fluid cylinder, a piston having connection with the gate and working in the cylinder, a pump having communication with the cylinder
50 and adapted to supply fluid thereto for closing the gate, a motor operating the pump, train controlled means actuating the motor, a fluid exhaust means, a valve controlling the fluid exhaust means, and a governor closing
55 the valve when motor is actuated and also opening it when the motor has been stopped.

In testimony whereof, I affix my signature, in presence of two witnesses.

JOHN T. CORRIGAN.

Witnesses:

J. E. GOEMBEL,
SADIE SNELL.