This invention relates to improvements in railway crossing gates and has for an object the provision of gates which include barriers of novel construction and supported for vertical movement transversely of a roadway upon opposite sides of a railway track, the barriers being controlled by a car or train, whereby they will be lowered by an approaching train and raised after the train has passed.

Another object of the invention is the provision of means for automatically illuminating the barrier at the beginning of the lowering operation, and for continuing such illumination until the barrier returns to its normally elevated position so as to avoid danger of accident after the barrier has been lowered, or when the barrier is being lowered or raised.

Another object of the invention is the provision of novel means for raising and lowering the barrier so that the barriers upon opposite sides of the track will be simultaneously operated.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claim.

In the drawings:

Figure 1 is a plan view illustrating the invention.

Figure 2 is an elevation with the barrier raised.

Figure 3 is a similar view with the barrier in lowered position.

Figure 4 is a fragmentary elevation showing the upper end of the gate, the view being at right angles to Figures 2 and 3.

Figure 5 is an enlarged fragmentary sectional view taken on the line 5-5 of Figure 4.

Figure 6 is a diagrammatic view illustrating the manner of wiring the gate.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the invention as shown comprises a pair of arch-shaped structures 10 which are positioned upon opposite sides of a railway track 11 and which straddle a roadway or crossing 12. The arch-shaped structures are spaced from the track as shown in Figure 1 and include side uprights 13 and cross bars 14. The arch-shaped structures are connected by beams 15 which extend transversely of the track, so that an arbor-like structure is provided through which trains or cars are adapted to pass.

Each of the arch-shaped structures 10 has associated therewith a barrier 16 which carries at its opposite ends a carriage 17. The wheels 18 of these carriages are grooved and engage vertically disposed tracks 19 which are located upon the opposite faces of the side uprights 13.

The barriers 16 are connected by a flexible member or chain 20, whose opposite ends are provided with bridles 21, the latter being connected to the barriers 16 as shown in Figures 2 and 3 of the drawings. The chains 20 extend over guide rollers 22 which are mounted upon beams 23 and pass under additional guide rollers 24 and are connected to one end of a pivotally mounted arm 25 as indicated at 26. The arm 25 is pivotally mounted upon the upper end of a standard 27 and pivotally mounted upon an arm 28 which extends through this standard is a lever 29 which is connected to the arm 25 by means of a link 30. The lever 29 has connected thereto one end of a rod 31 and the opposite end of this rod is eccentrically connected as shown at 32 to a gear 33, the latter being mounted upon a stub shaft 34 which extends from an upright 35.

The gear 34 is engaged and driven by a pinion 36 which is fast upon a shaft 37 and the latter also has secured thereon a pinion 38. This last mentioned pinion is engaged by a pinion 39 which is secured upon the shaft 40 and this shaft has also secured thereon a gear 41 which is driven from a pinion 42 fast upon the shaft of a motor 43. The gear 33 is thus driven at a relatively low speed.

In order to control the operation of the motor 43, a switch 44 is located upon opposite sides of the crossing. This switch is normally open and is adapted to be closed by a train carried member 45 which projects from...
the pilot 46 of a locomotive. The switches 44 are connected by means of a conductor 47 and are connected to one side of a battery B or other source of current by means of a conductor 45. A solenoid 49 is connected to the conductor 47 by means of a conductor 50 and this solenoid is connected to the opposite side of the battery B by means of a conductor 51.

The mechanism also includes a switch S which includes contacts 52, 53, 54 and 55. The contact 54 is connected to one side of the battery B by a conductor 56 and the contact 52 is connected to this conductor by means of a conductor 57. The contact 53 is connected to a brush 58 of a reversing switch R by means of a conductor 59, while a conductor 60 connects the contact 55 with a brush 61 of the reversing switch. The brush 58 engages a contact ring 62 while the brush 61 engages a contact ring 63, both of these rings having interrupted insulated portions 64. The rings 62 and 63 are preferably carried by the gear 65 and are in electrical connection with a brush 66 through this gear.

The brush 65 is connected to the motor 43 by means of a conductor 66, while a conductor 67 connects the motor with the battery B.

Assuming that a car or train is approaching the crossing as indicated in Figure 1 of the drawings, the member 45 will engage and close the switch 44, whereupon current will flow from the battery B through the conductor 48, the switch 44, the conductor 50, the solenoid 49 and through the conductor 51 back to the battery B. The solenoid 49 will thus be energized to draw its core inward against the action of a spring 69 and this core is connected by means of a rod 70 and an arm 71 which is loose upon a shaft 72. A spring 73 resists movement of the arm in one direction, while a stop 74 limits movement in an opposite direction. Mounted upon the shaft 72 is a ratchet wheel 75 which is fastened with the arm 76, and when the solenoid 49 is energized, the arm 71 will be moved against the action of its spring 73. As this arm carries a dog 77 which engages the ratchet wheel 75, the ratchet wheel will be moved and will carry with it the arm 76 so that the latter will engage the contacts 53 and 55. Current will then flow from the battery B through the conductor 56, the conductor 51, the contact 52, the arm 76, the contact 53, the conductor 59, the brush 58 and the ring 62, the gear 63, the brush 65, the motor 43 and back to the battery through the conductor 67. The motor will thus be energized to drive the gear 63, rotation being continued until the brush 68 rests upon the insulated portion 64 of the ring 62, whereupon the operation of the motor will cease. During this movement, the barriers 16 will descend through the operation of the lever 28 and arm 25.

After the train has passed over the crossing, the brushes 58 and 61 will engage the other switch 44 and as these switches automatically open, the first engaged switch will then be open. Current will then flow from one side of the battery B through the switch 44, the conductor 50, the solenoid 49, the conductor 51 and back to the battery B so that the solenoid will again be energized. The operation just described will be repeated except that the arm 76 will bridge the contacts 54 and 55, so that current will flow through the brush 61, the ring 62, the gear 63, the brush 65, the conductor 66, the motor 43 and back to the battery through the conductor 67. Operation of the motor will continue until the interrupted or insulated part of the ring 62 is positioned beneath the brush 61 as shown in Figure 6. During this operation of the motor, the barriers will be raised.

In order to make the barriers readily visible at night, they are provided with lamps 78 and these lamps are connected by means of conductors 79 with contact fingers 80. These fingers normally rest upon insulated portions 81 of contact bars 82 and these bars are arranged parallel with the side uprights 13 so that the contact fingers 80 will travel over the contact bars as the barriers are being raised and lowered. The bars 82 may be connected by means of conductors 83 with a suitable source of current.

Normally, the contact fingers 80 rest upon the insulated portions 81 of the bars 82, but as soon as the fingers leave these insulated portions during the lowering movement of the barriers, a circuit will be completed through the lamps 78 and the latter will be illuminated.

The lamps 78 will remain lit until the barriers are again raised to their normal positions.

The invention may be used without lowering or raising the barrier, or gate, as a signaling system. When so used the barrier will remain stationary in an elevated position controlled by switch and the lights automatically operated.

This barrier can be rendered inoperative by placing switch at base of motor. This switch will open circuit, motor will be inoperative, barrier remains stationary and lights will automatically work as the train approaches and leaves out.

This invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

Having described the invention what is claimed is:

In a railway crossing gate, an arch-shaped structure adapted to be positioned transversely of a roadway upon each side of and spaced, from and parallel with the tracks of the railway, means extending transversely...
of the tracks and connecting the tops of the arch-shaped structures, a horizontal barrier guided for vertical movement within each of said structures, means connecting the barriers, and means operatively connected with the barrier connecting means to simultaneously move the barriers.

In testimony whereof I affix my signature.

AUGUSTUS TILLMAN KING.