This invention relates to new and useful improvements in railway appliances, and particularly to railway gates.

One object of the invention is to provide a novel and improved mechanism by means of which the gates, at a railway crossing, and on each side of the railway, will be automatically lowered upon the approach of a train, to the crossing.

Another object is to provide means for holding the gates in lowered position, until the train has passed the crossing.

Another object is to provide means for releasing the holding means, after the train has passed, whereby to permit the gates to assume normal elevated position.

Other objects and advantages will be apparent from the following description when taken in connection with the accompanying drawings.

In the drawings:

Figure 1 is a plan view of a portion of a railway, and a road crossing, showing the gates in lowered position, and the electric wiring in diagram.

Figure 2 is an elevation of a portion of one of the gates and its supporting post, showing the mechanism for lowering the gate, the gate being shown in elevated position in dotted lines, and in lowered position in full lines.

Figure 3 is an enlarged sectional view on the line 2—3 of Figure 1, showing the track circuit closer.

Referring particularly to the accompanying drawings, 10 represents a railway, and 11 the road crossing the railway. Secured to certain of the railway ties, at opposite sides of the roadway, are the plates 12, and extending upwardly, and in the direction of one of the rails of the railway, are the arms 13, the outer extremities of which are disposed in horizontal planes. Extending longitudinally of said rail, and inwardly thereof, is a metal bar 14, the ends of which are turned away from the rail, to permit easy entrance of the flange of a car wheel between the bar and rail, while the body of the bar is formed with openings 15 receiving the said horizontals ends of the arms 13 therethrough. On the arms, and bearing against the bar 14, and the vertical portions of the arms, are coil springs 16, which urge the bar toward the rail, while nuts 17, on the outer ends of the arms retain the bar thereon, and in close proximity to the railway rail.

Disposed at opposite sides of the roadway and at opposite sides of the railway, are the posts 18, on each of which is pivotally supported the gate mast 19, said mast having a weight 20 on its inner end. Mounted on each post, below the pivot of the gate mast, is a housing 21, and supported in this housing is an electric motor 22, said motor being geared up to a winding drum shaft 23, on which is wound a cable or chain 24. The other end of the cable or chain is secured to the gate. Reciprocable through the housing, vertically, is a rod 25, the upper end of which is pivotally connected to a link 26, which in turn is pivotally carried by the gate. In one side of the rod, within the housing, there is formed a notch 27, into which is adapted to engage the hook-end of the vertical pivot 28, said pivot being normally urged away from the rod by the spring 29. The rod 25 performs the function of a keeper for the detent, as will be readily understood. Extending from the stem of the detent is an arm 30, and mounted on the outer end of said arm is an adjustable contact member 31. Mounted in the housing, beneath the contact member 31, is a metal block 32, and secured thereon is a stationary contact member 33, for engagement by the member 31, and also mounted on this block is a binding terminal 34. The stem of the detent is provided with a transverse armature plate 35, adapted to be attracted to the electro-magnet 36. Within the housing is a suitable controlling switch 37, and connected to the poles thereof are the line wires 38 and 39. The switch is adapted to engage with the contacts 40 and 41, and connected to the contact 40 are two wires 42 and 43, one of which leads to one of the binding terminals of the motor 22, while the other wire leads to one end of the electro-magnet 36. Connected to the other contact 41 are the wires 44 and 45, the former of which leads to the other end of the magnet 36, while the latter leads to the terminal 34. A wire 46 connects the arm 30 with the other terminal of the motor 22.

Normally the gates are in elevated position, held in such position by the weight 20. As a train nears the crossing, the flanges of the car wheels pass between the bar 14 and the rail, to close the circuit through the
switch 37, and the motor. It will be noted that the wire 38 is connected to the bar 14, while the wire 39 leads to the line. A wire 39' connects the other wire line, at the side of the railway, with the railway rail. The motor turns the shaft 23, whereby to wind the cable 24 thereon, with the result that the gate will be pulled down into closed, or horizontal position. As the gate moves down, it forces the rod 25 downwardly until the notch 27 is opposite the head of the detent 28. At the same time that the current sets the motor in operation, the current also energizes the magnet 36, so that when the detent is opposite the notch 27, the armature 35 will be attracted to the magnet, thus disposing the head of the detent within the notch, and holding the gate in lowered position. When the detent moves into the notch 25, the arm 30 is raised, whereby to break the circuit at the contacts 31—33, thus causing the motor to stop. The current, however, maintains the magnet in energized condition, whereby to hold the detent, and maintain the gates in lowered position, until the train has passed the crossing. As the last wheel of the train leaves the bar 14, the circuit is broken through the magnet, whereupon the spring 29 pulls the detent from the notch, and permits the weights of the gates to swing the latter into vertical position.

What is claimed is:

1. An automatic barrier for a railway crossing comprising a pivoted and weighted gate, a winding drum, a cable connected to the gate and drum, an electric circuit, a motor in the circuit operatively connected with the winding drum for closing the gate, a rod carried by the gate, and having a detent receiving means, a circuit breaker in the circuit, and a detent associated with the circuit breaker normally held by the rod to maintain the circuit closed, said detent being arranged to operate the circuit breaker to break the circuit upon engaging with said detent receiving means and to maintain the gate in closed position until a train has passed the crossing.

2. An automatic barrier for a railway crossing comprising a pivoted and weighted gate, an electric circuit including a train actuated circuit closer, a winding drum, connections between the drum and gate for closing the latter, a rod connected with the gate and movable therewith, an electro-magnet in the circuit, a detent adapted to be actuated by the magnet into engagement with the rod, a motor in the circuit for actuating the winding drum, and a circuit breaker controlled by the detent for opening the circuit to the motor upon closing of the gate.

3. An automatic barrier for a railway crossing comprising a gate, an electric circuit including a train operated circuit closer, an electric motor in the circuit, operative connections between the motor and gate for closing the latter, a notched rod carried by and movable with the gate, a detent for engagement in the notch of the rod to maintain the gate in closed position, means for urging the detent into engagement with the rod, and means actuated by the detent for opening the circuit to the motor upon engagement in said notch.

4. An automatic barrier for a railway crossing comprising a normally open gate, an electric circuit including a motor, for closing the gate, a rod carried by the gate and having a notch, a detent urged into contact with the rod when the circuit is closed and arranged to enter the notch when the gate is moved into closed position, and a circuit breaker in said circuit actuated by the detent into circuit open position upon entering the notch.

5. An automatic barrier for a railway crossing comprising a pivoted weighted gate, an electric circuit including a train actuated circuit closer, a detent, a motor in the circuit for closing the gate, a circuit breaker actuated by the detent to control the circuit to the motor, and means carried by and movable with the gate for gripping engagement by said detent to hold the gate in closed position, said detent being normally held out of gripping position by said gate carried means.

In testimony whereof, I affix my signature.

MATTHEW DUCHSHERER.