

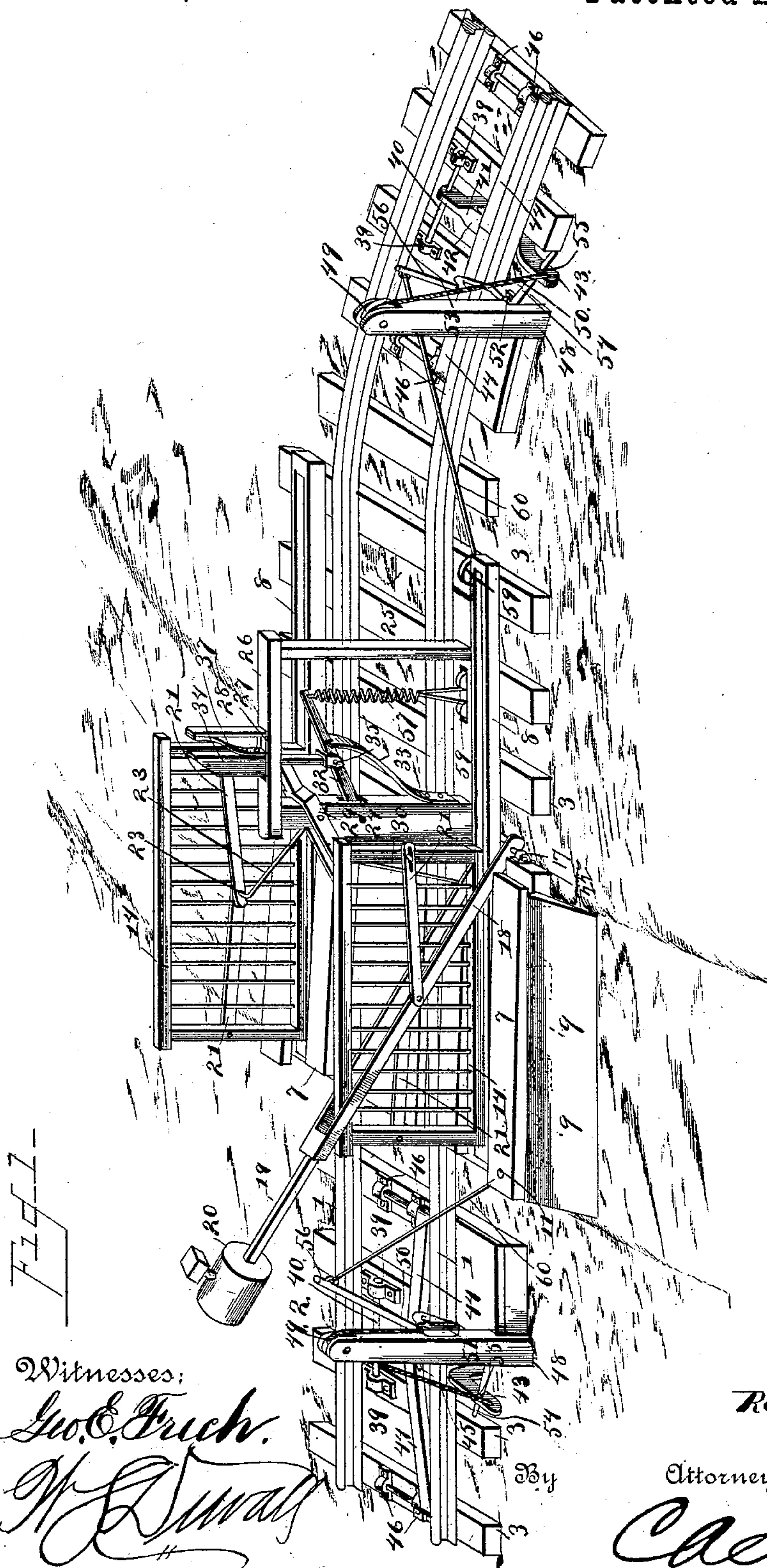
(No Model.)

3 Sheets—Sheet 1.

R. H. NELSON.
RAILWAY GATE.

No. 434,564.

Patented Aug. 19, 1890.



Witnesses;

Geo. C. Frick.

W. L. Swails

Inventor

Robert H. Trellson

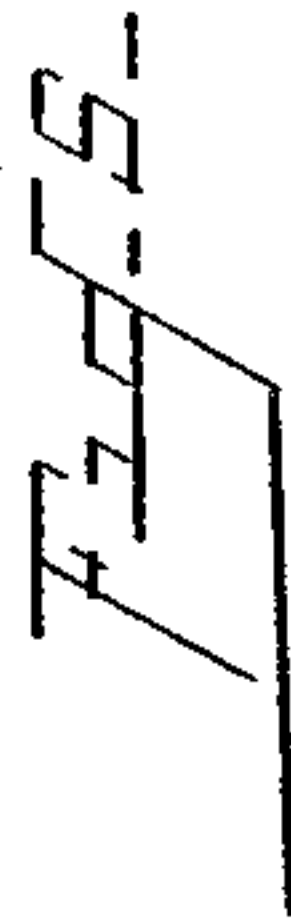
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3 Sheets—Sheet 2.

No. 434,564.

Patented Aug. 19, 1890.



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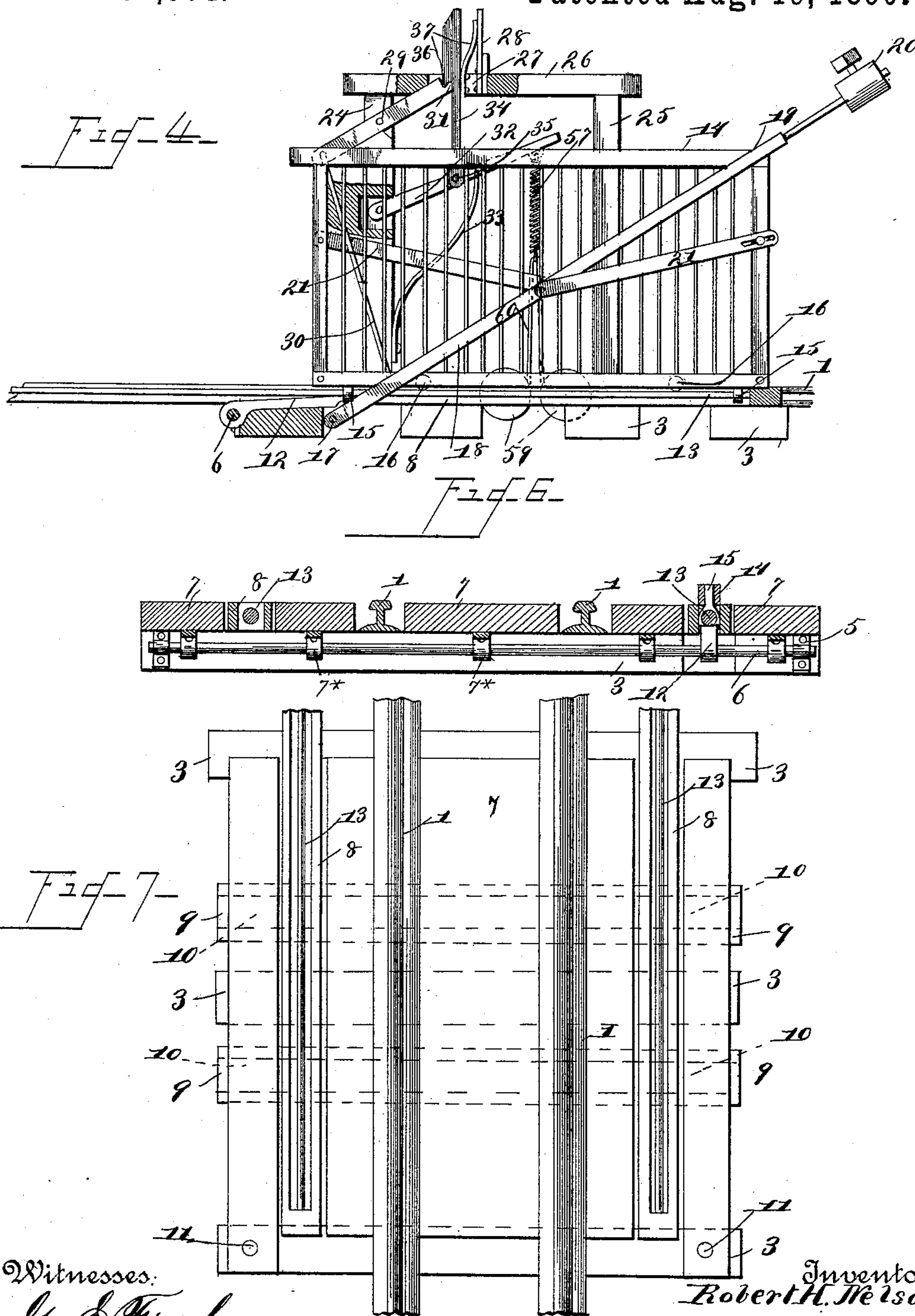
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

ROBERT H. NELSON, OF TROUT DALE, VIRGINIA.

RAILWAY-GATE.

SPECIFICATION forming part of Letters Patent No. 434,564, dated August 19, 1890.

Application filed January 4, 1890. Serial No. 336,898. (No model.)

To all whom it may concern:

Be it known that I, ROBERT H. NELSON, a citizen of the United States, residing at Trout Dale, in the county of Grayson and State of Virginia, have invented a new and useful Railway-Gate, of which the following is a specification.

This invention has relation to railway-gates to be used at crossings and of that class adapted to be automatically closed by an approaching car and opened by a receding car; and the object and advantages of the invention, together with the novel features of the same, will hereinafter appear, and be particularly pointed out in the appended claims.

Referring to the drawings, Figure 1 is a perspective of a railway-gate constructed in accordance with my invention, the gate being closed. Fig. 2 is a central longitudinal vertical section of the same, looking toward the weight-carrying gate of Fig. 1. Fig. 3 is a detail enlarged in perspective of one of the gate-operating treads. Fig. 4 is a detail in side elevation of the gate-operating lever and the latch and adjacent mechanism for actuating the same. Fig. 5 is a transverse section through the platform; Fig. 6, a detail in transverse section of the platform-supporting rock-shaft and adjacent parts for locking the gate against closing. Fig. 7 is a plan view of that portion of the road-bed in line with the crossing.

Like numerals of reference indicate like parts in all the figures of the drawings.

1 represents the usual rails, supported upon the bed by the cross-ties 3.

Projecting from a cross-tie located at one side of an intersecting roadway or crossing are two bearing-eyes 5, in which is mounted for movement a transverse rock-shaft 6, and to said shaft there is secured a series of strips forming a platform 7, the strips being arranged so as to form intermediate spaces for the passage of the rails 1 and gate-track frame 8, one of said frames being located at each side of the railroad-track. The strips or timber forming the platform 7 are connected between the ties which they cross by cross-braces 9, and under said braces are inserted transverse flat springs 10, which normally keep the free end of the platform slightly elevated, said platform being rigidly connected by loops

7* to the rock-shaft 6 and limited in its upward movement by means of a pair of headed studs 11, projecting from a subjacent cross-tie and passing through stud-receiving openings formed in the ends of the two outside strips. Projecting rearwardly from the rock-shaft 6 at one side of the track and extending into the track-frame 8 is an arm 12, terminating at its extremity in a catch, which, when the platform is raised by the support of the springs, is some distance below a longitudinal track-bar 13, that extends throughout the length of the track-frame 8; but when the platform is depressed, as by a vehicle or person crossing the same, the arm 12 has its free end elevated by the oscillation of the rock-shaft and is brought in contact with the track-bar, whereby, as will hereinafter appear, a gate mounted on the track-bar will be prevented from being actuated by the gate operating mechanism, and hence the possibility of the gates closing while the platform is occupied by a vehicle or carriage is obviated.

14 represents a sliding gate, one of which is arranged at each side of the railroad-track, and each of the gates is provided with sleeves 15 upon its lower edge, which inclose the rods or track-bars 13 and with small rollers 16 for riding upon the bars.

In bearings 17, arranged at each side of one of the track-frames 8, are pivoted the opposite sections of a sweep 18, the ends of which extend beyond the gate and are connected and terminate in a sweep-arm 19, upon which is mounted an adjustable weight 20. From each of the end bars of the gate there projects a connecting-lever 21, one of which has its outer end pivoted to the gate, while the end of the other is slotted and loosely connected to the same, and each of said bars is loosely pivoted at its inner end to one of the sections of the sweep.

22 represents a crank-shaft, which is journaled in the bearings 17 and a similar bearing located at the opposite side of the railroad-track, said crank extending under the track to the bearing mentioned, and beyond said bearing bent to form a crank-arm 23, to which the ends of the opposite levers 21 of the opposite gate are connected, and thus it will be seen that any movement of the first-mentioned gate, by reason of the falling of the weighted

sweep at either side of a vertical line, will cause a similar and simultaneous movement of the last-mentioned gate at the opposite side of the track, and thus both sides of the roadway will be closed to travel.

24 represents a post located between the track-rail and that gate carrying the sweep. At one side of the same there rises a second vertical post 25, said posts being connected at their upper ends by a cross-bar 26, provided near one end with an opening 27, and from one side of the opening there projects a vertical wearing-plate 28.

29 represents a bifurcated lever, the bifurcation of the lever embracing the post 24 and pivoted thereto. A rod 30 connects the bifurcated end of the lever with the inner one of the sections of the sweep, and the opposite end of the lever terminates in a catch 31.

32 represents a lever pivoted in the post 24 below the bifurcated lever 29, and said lever is supported in a raised position or a position that is nearly horizontal by a flat spring 33.

34 represents a catch-bar pivoted at its lower end to the center of the lever 32. The upper end of said catch-bar projects through the opening 27 in the connecting-bar 26, and below said opening it is provided with a shoulder 36, said bar being normally pressed against the catch end of the bifurcated lever by means of a flat spring 37, projecting from the rear face and upper end of the catch-bar, the free end of the spring pressing and riding against the vertical plate 28.

At any suitable distance from the crossing there is mounted in bearings 39 a rock-shaft 40. Upon this is mounted a rock-arm 41, which is bifurcated, forming upper and lower branches 42 and 43. The branch 43 is curved and projects under an adjacent rail. The upper branch or bifurcation is flattened and merely extends into vertical line with said rail. At each side of the rock-arm there are journaled upon adjacent ties, levers, or treads 44 the ends of the levers meeting opposite the shorter upper branch of the rock-arm, at which point they are provided with transverse recesses 45, in each of which rests one-half of the flattened shorter branch of the rock-arm. These treads are journaled in bearings 46, by means hereinafter described, and have their tread portions 47 normally elevated above the upper edge or surface of adjacent track-rails.

48 represents a post located at one side of the track opposite the treads 47 and slightly in advance of the lower branch of the rock-arm. This post is provided at its upper end with a pulley 49, and over the pulley there passes a rope 50. One end of this rope is connected to the longer branch of the rock-arm, and the opposite end of the rope is provided with the counterbalancing-weight 51, which normally maintains said branch in an elevated position and consequently raises the tread above the track-rail.

Opposite each of the posts 48 there is jour-

naled in bearings 52 a crank-shaft 53, provided at its ends with cranks, which are disposed in opposite directions. The shorter crank 54 is loosely connected, as at 55, to the extremity of the lower branch of the rock-arm, and the opposite crank-arm 56 projects vertically.

57 represents a coiled spring, which depends loosely from the free end of the lever 32. A tread mechanism, as described, is located at a proper distance at each side of the roadway, and between the same and a point directly below the spring 57 there is journaled in the cross-ties and other convenient stationary objects a series of loose guide-pulleys 59. From each of the vertical crank-arms of the crank-shafts 53 there leads a wire 60, which passes under the guide-pulleys 59 and between a pair of the same, located directly under the spring 57, the terminals of the wires being connected to the lower end of said spring.

The operation of my invention is as follows: Taking the gates in an open position, a train approaching from either direction by its advance wheels depresses the tread-levers 47, and these levers are of such a length as to remain in a depressed position for the reason that before the wheels of one truck leave the same the wheels of the next truck have entered upon them. When the treads are depressed, the rock-arm 41 is lowered, which oscillates the crank-shaft 53 and, through the medium of the crank-arm 56, draws upon the wires 60. The strain is then brought upon the coiled spring, which is considerably stiffer than the flat spring that supports the lever 32, and consequently said lever is depressed against the tension of the flat spring. When said lever is depressed, the catch-bar is reciprocated downwardly, and as it is pressed in contact with the bifurcated latch-lever said latch-lever is likewise depressed at its inner end. By a depression of the latch-lever at one end the outer end of said lever is raised, and through the medium of the connecting-rod the sweep is elevated slightly beyond a vertical position. By reason of the connection described between the sweep and the gate it will be apparent that the gate will, by the movement of the sweep, be partially closed. Thus far the mechanism has operated the gate, and the sweep, being now at a slightly-inclined position, the weight at the upper end of the sweep acts to complete the closing of the gate, and the passage-way across the track at this point is closed against travel. After the train has passed by the gates it depresses in a similar manner the tread mechanism located at the opposite side of the gate, which causes a repetition of the operation just described, and by the mechanism the sweep is again elevated and the partial opening of the gate is completed by the falling of the sweep, as caused by the weight. In this way it is apparent that gates located at the side of a single track

may be opened and closed by a train of cars traveling in either direction.

Having described my invention, what I claim is—

1. In a railroad-gate-operating mechanism, the combination, with said mechanism, of the rock-arm pivoted transversely between the rails and bifurcated at its free end, its lower branch being extended under the track, a pair of treads arranged inside of one of the rails and recessed at their adjacent ends to receive the upper branch, means for supporting the treads in an elevated position, and a crank-shaft having one arm connected with the lower branch of the rock-arm and another arm with the gate-operating mechanism, substantially as specified.

2. In a railroad-gate-operating mechanism, the combination, with said mechanism, of the rock-arm pivoted transversely between the rails and bifurcated at its free end, its upper branch being flattened, a pair of treads journaled upon the ties having their adjacent ends transversely recessed to receive said flattened branch of the rock-arm, a post located at one side of the track and having a pulley, a rope mounted over the pulley and having one end connected to the lower branch of the rock-arm and the opposite end to a weight, and a crank-shaft having opposite crank-arms, one of which is loosely connected with the lower branch of the rock-arm, and the other of which is oppositely disposed, and a wire connecting the opposite crank-arm with the gate-operating mechanism, substantially as specified.

3. In a railroad-gate, opposite track-bars and gates mounted for movement on the same, in combination with a platform mounted in front of said gates, springs for supporting the platform, and a stop mounted on the platform and adapted to be thrown into the path of the gates by a depression of the platform, substantially as specified.

4. In a railway-gate, the combination, with a transverse rock-shaft mounted in bearings under the track, a platform rigidly connected at one end to the shaft, a series of springs for supporting the free end of the platform, and a rock-arm projecting from the rock-shaft, of a sliding gate mounted above the rock-arm and means for operating the same, said rock-arm being designed to be thrown into the path of the gate by a depression of the platform, substantially as specified.

5. The combination, with the opposite gate track-bars and gates mounted on the same, provided with track-bar-embracing sleeves, of a rock-shaft arranged under the rods, and provided with a rock-arm terminating below the rod, a platform having one end rigidly secured to the rock-shaft, and springs arranged under the platform for supporting the free end of the platform and depressing the free end of the rock-arm out of the path of the gate, substantially as specified.

6. In a railroad-gate, a track-bar, and a

sliding gate mounted for movement thereon, in combination with a sweep having its lower end pivoted below the gate and between its ends connected pivotally with the gate and provided at its free end with a weight, weighted treads arranged beyond the ends of the gate, and mechanism arranged between the treads and gate connected to and actuated by the treads and adapted to operate the gate partially in either direction so as to bring the sweep beyond a vertical line, substantially as specified.

7. In a railroad-gate, the combination, with a gate and a track for the same, of a sweep pivoted at its lower end and having its upper end extending beyond the gate and a weight mounted thereon, opposite levers pivoted at their outer ends to the ends of the gates and at their inner ends to the intermediate portion of the sweep, mechanism for partially opening or closing the gate and throwing the sweep to an inclined position, and treads arranged beyond the ends of the gate and connected with and adapted to operate the gate-operating mechanism, substantially as specified.

8. The combination, with opposite gates and opposite tracks for the same, of a bifurcated sweep embracing the sides of one of the gates and pivoted at its lower ends upon a rock-shaft having a rock-arm projecting to the opposite gate, levers having their outer ends pivoted to each of the end rails of the gate, the levers of one gate being each pivotally connected to a branch of the bifurcated sweep and those of the other to the end of the rock-arm, and means for throwing the sweep slightly beyond the vertical position, substantially as specified.

9. The combination, with a railroad-gate and a track upon which the same slides, of a sweep pivoted at one side of and to the gate, a frame located at one side of the sweep, a pivoted latch-lever mounted on the frame, a rod connecting the same with the sweep above its pivot, a lever pivoted below the latch-lever, a spring for supporting the same, and a catch-bar mounted for reciprocation in the frame and maintained in engagement with the latch end of the latch-lever, treads arranged at each side of the gate, and wires connecting the treads with the free end of the spring-pressed lever, substantially as specified.

10. In a railroad-gate, the combination, with a sliding gate, a weighted sweep pivoted thereto, and levers connecting the sweep pivotally to the gate, of a latch-lever, a post for supporting the same, a rod connecting said lever at its rear end to the sweep, a transverse bar arranged above the post and having an opening, a reciprocating catch-bar playing in the opening, a lever pivoted to the post and to the catch-bar, a spring for supporting said lever, and a spring for pressing the catch-bar into contact with the latch-lever, tread mechanisms located at each side of the gate, and

wires connecting the same to the end of the pivoted spring-pressed lever, substantially as specified.

11. The combination, with the gates arranged each side of the railroad-track, the tracks for the same, the rock-shaft journaled under the tracks, having one end vertically disposed, pivoted levers mounted on the gate at that end and connected to said end, a sweep having its lower end mounted on the rock-shaft and having a weight at its upper end, and pivoted levers connecting the sweep with the gate, and a frame consisting of two vertical posts and a connecting-bar having an opening arranged at one side of the sweep, of a lever bifurcated and pivoted to the post of the frame, a rod connecting the bifurcated end to the sweep, a catch formed at the opposite end of said lever, a lever pivoted to said post below the latch-lever, a spring for supporting the same secured to said post, a catch-bar mounted in the opening of the frame and pivoted to the lever and having a catch-shoulder adapted to engage the latch-lever, a plate extending from said opening, and a flat spring projecting from the bar against the

plate, a coiled spring depending from the spring-supported lever, a series of guide-rollers arranged each side of the mechanism, opposite wires leading from the spring guided by said rollers and connected to a crank-arm formed on the end of a crank-shaft having oppositely-disposed crank-arms, a rocking arm pivoted between the track-rails and bifurcated at its free end, one of the bifurcations being loosely connected with the other crank-arm, a post having a pulley arranged at one side of said crank-arm, a rope passing over the pulley and having one end connected to the crank-arm and the opposite end to the weight, and opposite pairs of treads journaled on adjacent ties and having their inner end recessed to receive the upper branch of the bifurcated rock-arm, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ROBERT H. NELSON.

Witnesses:

J. H. GOLLEHON,
J. M. HAULSEE.