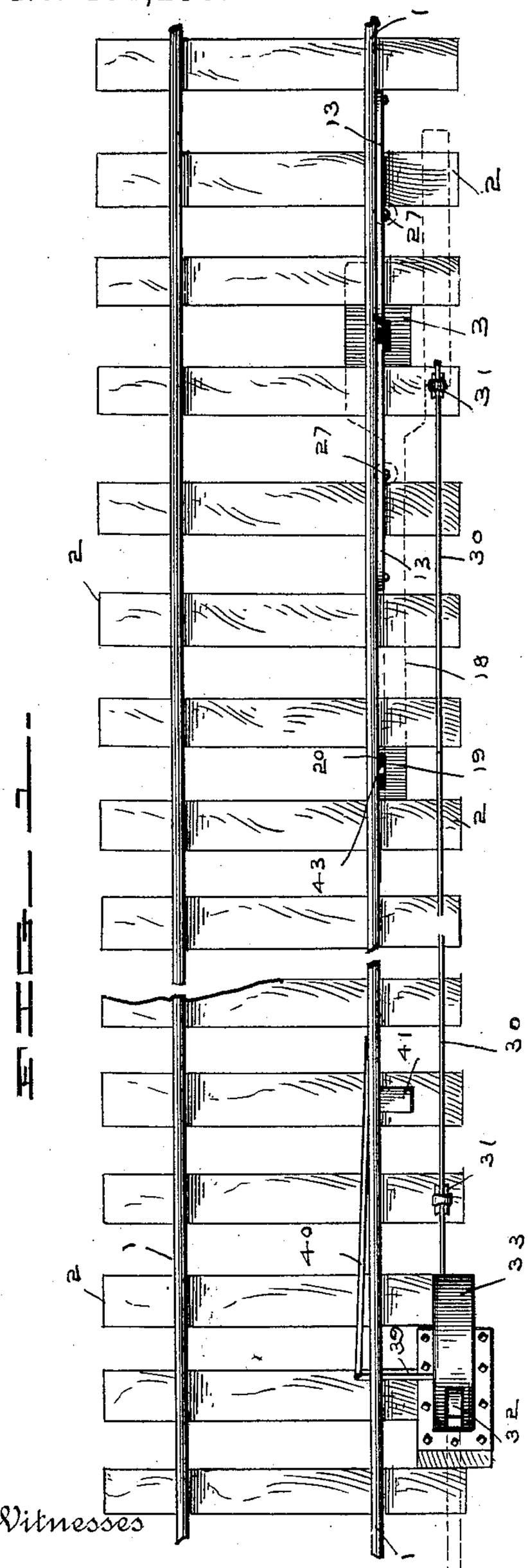
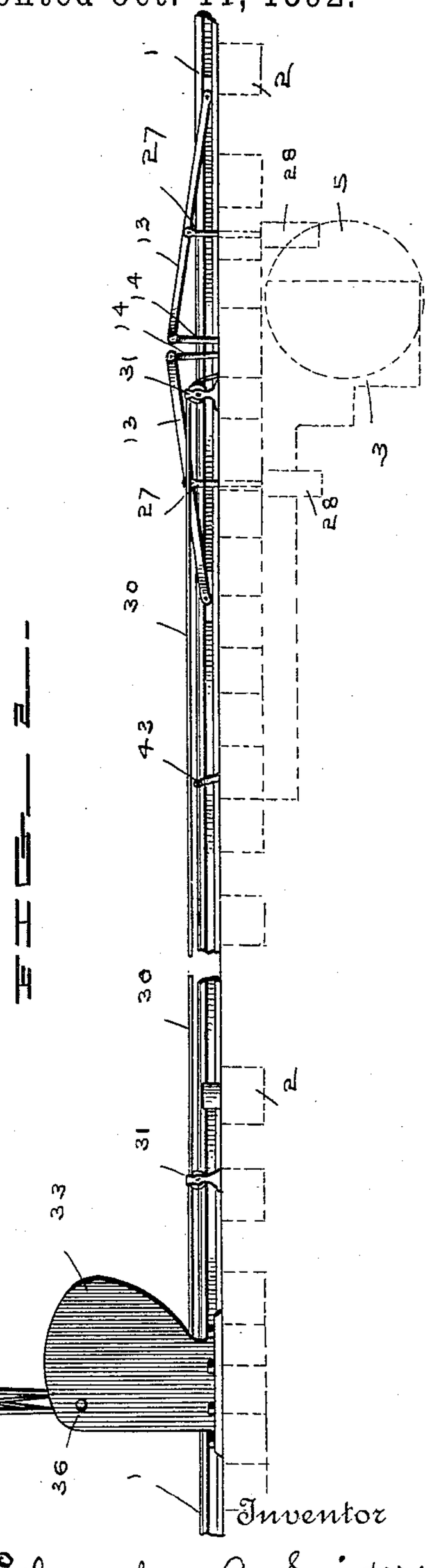
(No Model.) 2 Sheets—Sheet 1.

C. A. SNIDER.

RAILROAD GATE.

No. 484,256. Patented Oct. 11, 1892.





Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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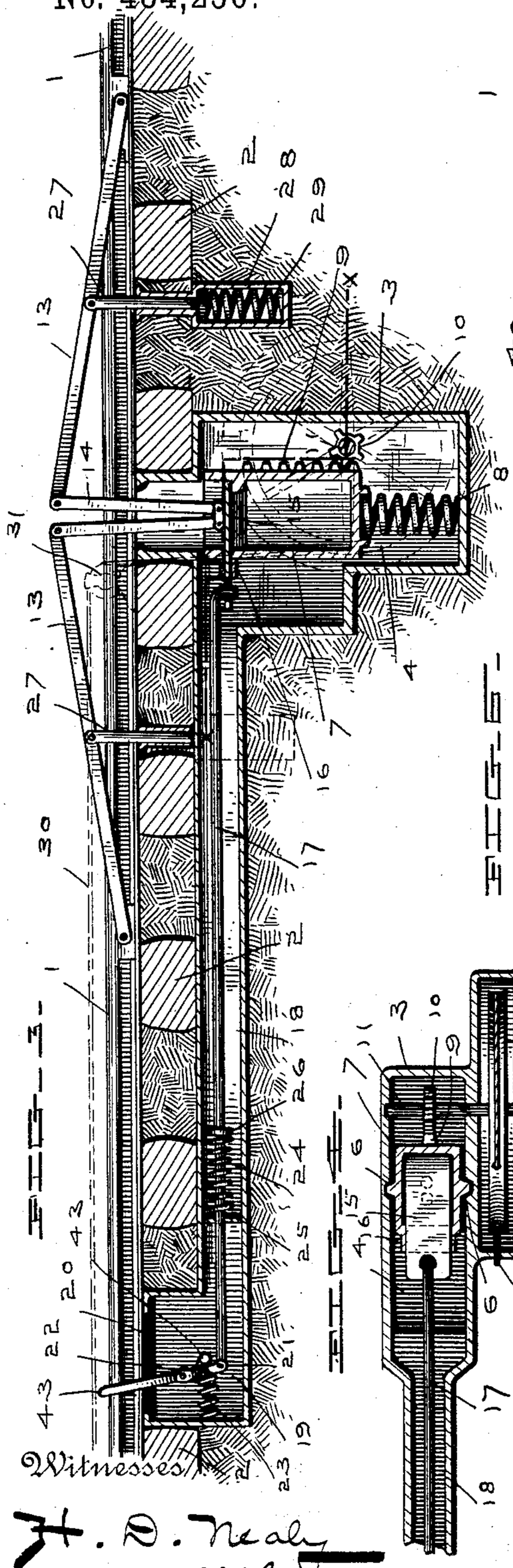

FIG. 1.

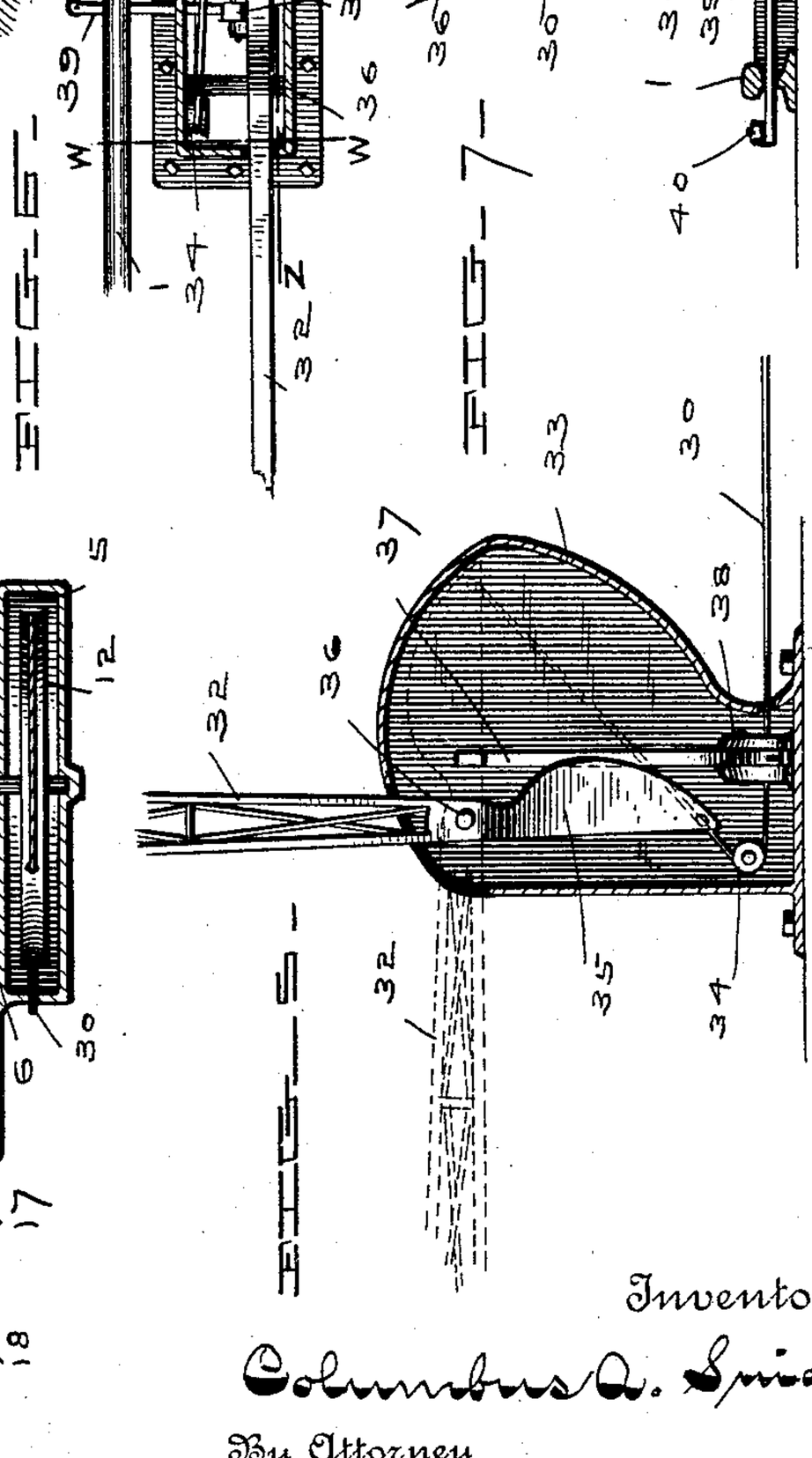

FIG. 2.

FIG. 7.

FIG. 3.

FIG. 5.

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UNITED STATES PATENT OFFICE.

COLUMBUS A. SNIDER, OF GREENCASTLE, INDIANA.

RAILROAD-GATE.

SPECIFICATION forming part of Letters Patent No. 484,256, dated October 11, 1892.

Application filed June 24, 1892. Serial No. 437,845. (No model.)

To all whom it may concern:

Be it known that I, COLUMBUS A. SNIDER, of Greencastle, county of Putnam, and State of Indiana, have invented certain new and useful Improvements in Railroad-Gates; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like figures refer to like parts.

My invention relates to new and useful improvements in the construction and method of operating railway-gates and to one of that class wherein the gate is automatically lowered as the train approaches and raised in a similar manner after the train has passed, the movement of the train operating upon suitable mechanism, which in turn operates to raise or lower the gates, and it will be understood from the following description.

In the drawings, Figure 1 is a plan view of a railway-track centrally broken away, showing a single gate and mechanism for operating it. Fig. 2 is an elevation of the same. Fig. 3 is a longitudinal sectional view through the operating mechanism. Fig. 4 is a cross-sectional view on the line *x x*, Fig. 3. Fig. 5 is a longitudinal section through the hollow gate-base on the line *z z*, Fig. 6. Fig. 6 is a cross-sectional view through the same on the line *y y*, Fig. 7. Fig. 7 is a vertical section on the line *w w*, Fig. 6.

In detail, 1 represents a track laid on suitable ties or sleepers 2 in the ordinary manner, 3 being a hollow box or casing, which is preferably sunk in the ground beneath the ties, its top extending upon a line with the base of the rails, and the box consisting of a main chamber 4 and an auxiliary chamber 5. In the sides of the main chamber are formed grooves 6, and in these grooves slides, which are formed on the sides of the sliding box 7, are adapted to move, this box being supported normally at the top of the chamber by a coiled spring 8 and having on one end a series of teeth 9, which engage with the teeth on a pinion 10, rigidly secured to the shaft or axle 11, having bearings in the walls of the casing 3 and extending through to the auxiliary chamber 5, in which is a grooved fly-wheel 12, rigidly mounted on the axle 11, as shown in Fig. 4.

13 are levers pivoted at their outer ends to the rail 1 or to blocks formed thereon, their inner ends being pivoted to rods 14, these being pivoted together at their lower ends and normally resting on the movable partition 15, which is supported in the box 7 near its top. This partition works in guides 16, formed in one side of the box, and at its outer end has an opening in which the horizontal rod 17 is adapted to engage. Rod 17 works loosely in the covered box 18, which forms an extension to the main casing 3, and at its outer end has an extension 19, which is carried up to a line with the base of the rails and has a slot 20 in its top. The outer end of the rod 17 is pivoted to a link 21, which is in turn pivoted within the box 19 at 22.

43 is a bell-crank lever, also pivoted at 22, its upper end extending through the slot 20 and above the rail and its lower end engaging with the link 21. A spring 23, secured to its end and to the end of the box, operates to hold the lever 43 against the link.

24 is a coiled spring working between a partition 25 in the box 18 and the collar 26, formed on the rod 17, which operates against the tension of the coiled spring 23, thus holding the rod and its connections in the position shown in Fig. 3.

27 are rods pivoted to the operating-levers 13 a little on one side of their centers and extending down into cylinders 28, which are sunk in the ground, the rods having pistons on their ends, which rest on the tops of the coiled springs 29, which operate to hold the levers in a lifted position, as shown.

To the fly-wheel 12 in the auxiliary chamber 5 of the casing 3 is connected a wire or cord 30, which extends up above the ground and is carried on pulleys 31 to the base of the gate that is to be operated, which may be at any convenient distance—say from three hundred to seven hundred feet. It enters the gate-base 33 at its lower end and is there carried around the pulley 34 and extending upward is connected to a projection on the weighted end 35 of the gate. The gate itself is of any convenient length and is pivoted at 36 within the base, so that the longer end of the gate is slightly heavier than the weighted end and adapted to lean slightly forward of a vertical line when open. 37 is a support for the weighted end, which is pivoted in brackets

38 and at its upper end notched and adapted to engage with the under side of the weighted end of the gate, as shown in Fig. 7, and retain it in a lifted position, thus holding the gate in a lowered position, as shown in dotted lines in Fig. 5. The lower end of the support is pivoted to a connecting-rod 39, which passes outside of the gate-base and through a slot in the rail and is connected on the inner side to a shifting-lever 40. The pivoted end of this shifting-lever stands out a slight distance on the inside of the rail and its outer end fits up close to the rail and is pivoted to a short arm or rod working through an opening in the rail and within the box 41, set at one side, a spring 42 being coiled around the rod and retained in place by a pin, thus normally holding the outer end of the lever snugly against the inside of the rail, as shown in Fig. 6.

The gate herein shown is to be operated only by a train upon the right, and for operation by a train coming in the opposite direction a duplication of the operating mechanism would be required, and this would also be needed in a case where double tracks are used or two or more gates required, the operation of the gate itself remaining precisely the same. Upon a train approaching from the right the tread of the wheels will run upon and depress the operating-levers 13 and their inner ends operating on the rods 14. These in turn bearing on the partition 15 of the sliding box will carry the same downward against the tension of the coiled spring 8, and the teeth on the side of the box, engaging with the pinion 10 on the shaft 11, will rotate the same, and with it the fly-wheel 12, thus releasing the tension of the operating wire or cord 30. This then being slack within the base of the gate, the gate by its gravity will fall, the weight at its opposite end being such as to make the movement of the gate easy, and upon its falling into a horizontal line the pivoted supporting-lever 37 will engage with the under side of the weighted end and retain it in a horizontal position until the train has reached the crossing, when the flange on the car-wheels will force inward the end of the releasing-lever 40, which, through its connecting-rod 39, will shift the lower end of the lever 37, thereby moving the upper end outward, releasing the weighted end of the gate. At the time the train has entirely passed over the operating-levers they will be forced upward by the coiled springs 29 and the sliding box 7 will be forced upward by its spring 8, its teeth operating on the pinion 10 to turn the shaft 11 and the fly-wheel 12 backward until the operating cord or wire is taut, and the sliding box will be held in its partly-lifted position through the tightening of the wire until the moment when the gate is released by the lever 37, when the tension of the coiled spring 8, bearing against the under side of the sliding box, will operate to force the box 7 entirely up and to turn the grooved wheel and operate through the connecting wire or cord to lift the gate into the position shown in Fig. 5.

It will be understood by reference to Fig. 3 that the opening in the partition 15 of the sliding box is in line with the bent end of the horizontal rod 17, and when the box is carried downward it releases it from engagement with such rod, and upon its returning to its normal or raised position it then engages with the end of the rod, the opening in the partition being large enough always to accomplish this, and should a train come from the opposite or left-hand side, where it would not be desirable to have the gate operate, the tread of the wheels would engage with the pivoted lever 17, forcing it downward, its end engaging with the crank 21, throwing it to the left, and with it the rod 17, thus operating to pull out the partition 15 of the sliding box, so that as the train passes over the operating-levers 13 the rods 14 would be forced down into the sliding box without moving or operating it at all.

Although, as here shown, the mechanism for operating my improved gate is generally placed beneath the ties, it is obvious that the construction may be so changed as to allow it to be placed outside the ties and on a level with the ground; or it may be placed in the present position, the rails being set on longitudinal sleepers instead of the ordinary cross-ties.

What I claim as my invention, and desire to secure by Letters Patent, is the following:

1. In an operating mechanism for a railway-gate, a vertical sliding box working in a casing set at one side of the track, teeth on such box engaging with a pinion on a shaft at one side, carrying a grooved wheel, an operating wire or cord attached to such wheel and the gate to be operated on, pivoted levers supported above the track and adapted to come in contact with the passing car-wheels, and rods pivoted to their inner ends, adapted to operate on the sliding box and depress the same, whereby the gate is allowed to fall, in combination with means for retaining such gate in a lowered position and releasing the same when the train has passed, substantially as shown and described.

2. An operating mechanism for a railway-gate, consisting of a casing set contiguous to the rails, a spring-controlled box sliding therein, teeth formed on the side of such box, engaging with a pinion on a shaft carrying a grooved fly-wheel within such casing, a wire or cord connecting such wheel with the weighted end of the gate to be operated upon, operating-levers pivoted to one side of the rails and adapted to be operated on by the wheels of a passing train, rods pivoted to the inner ends of such levers, their ends working in the sliding box, and a movable partition within such box, connected with a horizontal rod operated through a trip set at one side of the rail, whereby the gate will be operated through the movement of the sliding box by the train

in one direction only, substantially as shown and described.

3. An operating mechanism for a railway-gate, consisting of a casing set beneath one of the rails, a spring-controlled box sliding on tracks therein, teeth formed on one side of such box, engaging with a pinion carried on a shaft, a grooved fly-wheel also mounted on such shaft and within the casing and connected by a cord or rope with the weighted end of a pivoted gate set at a suitable distance from the operating mechanism, operating-levers, their inner ends normally supported above a line with the rails by springs, and rods pivoted to such inner ends and adapted to operate on a partition within the sliding box, whereby upon the passage of the train over the operating-levers the sliding box will be depressed and through its connections with the gate the latter will be dropped, substantially as shown and described.

4. An operating mechanism for a railway-gate, consisting of a spring-controlled box sliding within a suitable casing set beneath the rails, a grooved fly-wheel mounted on a shaft within such casing and rotated by the movement of such box through a rack and pinion, such fly-wheel connected by a wire or cord with the weighted end of a gate set at any suitable distance from such operating mechanism, pivoted levers held normally above a line with the rails and operated on by the wheels of the passing train, and rods connected to such levers and normally in connection with such sliding box, whereby through the movement of the levers the sliding box is operated on and through its connections with the gate the latter is lowered, substantially as shown and described.

5. An operating mechanism for a railway-gate, consisting of a spring-controlled box sliding on tracks within a suitable casing set beneath the rails, such box operating to rotate a grooved fly-wheel, also within such casing and connected by a wire or cord with the weighted end of a gate set at a suitable distance and pivoted within a base, means for holding the gate in a lowered position, a movable partition within the sliding box, detachably connected by an operating-rod, its end pivoted to a crank adapted to be operated upon by a lever whose end projects above a line with the rail, operating-levers pivoted to one side of the rail, their inner ends in line with and above the sliding box and above a line with the rail, and rods pivoted to their inner ends, and adapted to operate on the partition of the box upon a train passing over such operating-levers in one direction, and to operate loosely within such box upon the train coming from the other direction after tripping the lever which removes the sliding partition of such box, in combination with a lever set within one of the rails and connected with a pivoted supporting-lever for releasing the gate when the train has passed, substantially as shown and described.

6. A railway-gate pivoted within a suitable base and carrying a weighted arm on its inner end, a wire or cord connected to such arm and carried by suitable pulleys along the rails to a suitable distance, where it is attached to a grooved fly-wheel of an operating mechanism, such fly-wheel mounted on a shaft within a casing beneath the rails, a pinion carried on such shaft and operated through engaging teeth on the side of a box sliding in grooves within such casing and supported upon a suitable spring, a movable partition within such box, adapted to be operated upon through pivoted levers, their inner ends above a line with the rail and engaging with the passing wheels of a train, whereby such sliding box is depressed and the gate allowed to fall, and a lever pivoted to one side of the track and adapted to engage with the wheels of the train and to operate in one direction upon a crank connected with a rod and the partition of the sliding box, whereby such partition will be withdrawn from the box and the operating-levers 13 will become inoperative, in combination with suitable means for holding such gate in a lowered position and releasing the same when the train has passed, substantially as shown and described.

7. A railway-gate pivoted within a suitable base and having a weighted arm on its inner end, a cord connected therewith and passing over a pulley within such base and connected with mechanism at a suitable distance therefrom for raising and lowering such gate, a pivoted supporting-lever within such base, adapted to engage with the weighted end of the gate when the latter is raised, and a lever pivoted inside the rails and operated upon by the flange of the passing car-wheels to release the lowered gate when the train has passed, substantially as shown and described.

8. An operating mechanism for a railway-gate, consisting of a spring-controlled box sliding on tracks within a suitable casing set beneath the rails, teeth on the side of such box engaging with a pinion carried on a shaft having bearings in such casing, a grooved fly-wheel also carried on such shaft, a wire or cord attached to such fly-wheel and carried over suitable pulleys to the gate to be operated upon, a movable partition within such sliding box, connected with a rod whose outer end is pivoted to a crank, such crank pivoted within an extension of the main casing, a lever pivoted within such extension, one end engaging with such crank, its upper end extending above the rails and adapted to engage with the wheels of a passing train and to operate in one direction upon such crank and its connecting-rod, whereby the movable partition of the sliding box will be drawn out, operating-levers pivoted to one side of the track, their inner ends normally supported by springs above a line with the rail, and rods pivoted to such ends and adapted to work within the sliding box, whereby upon the passage of the train in one direction the levers

will be depressed and with them the sliding box, whereby through its connections with the gate the same will be operated upon and upon the passage of the train from the opposite direction the arms will be inoperative within such box, substantially as shown and described.

In witness whereof I have hereunto set my hand this 18th day of May, 1892.

COLUMBUS A. SNIDER.

Witnesses:
DANIEL HOWARD,
LEWIS MAHAN.