

No. 637,836.

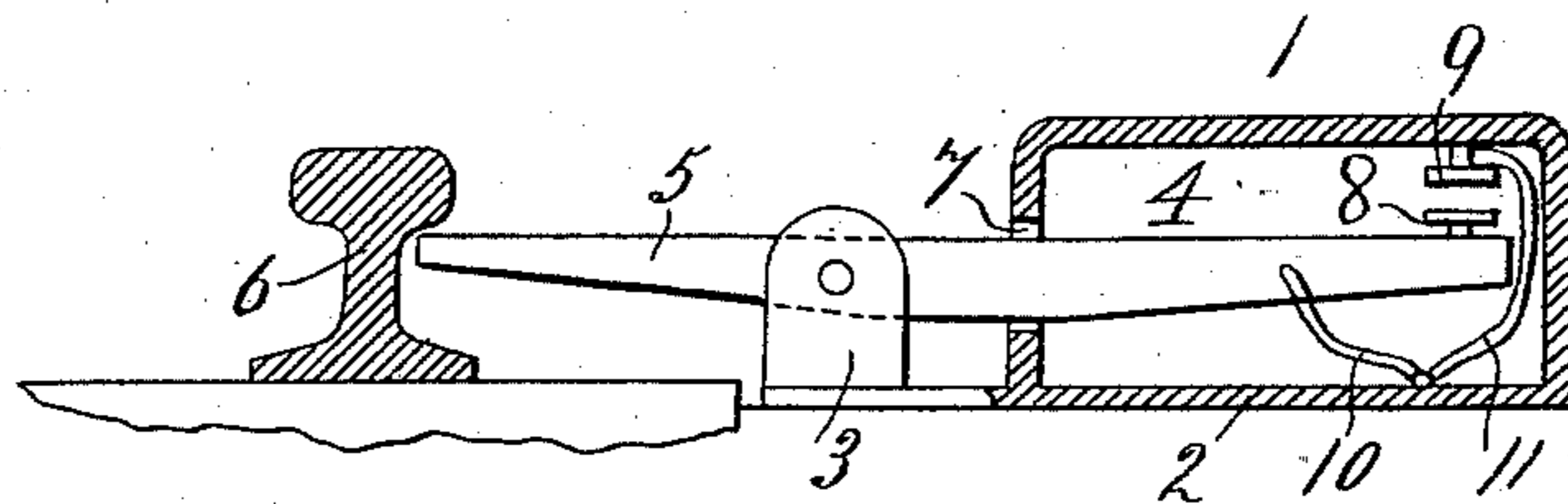
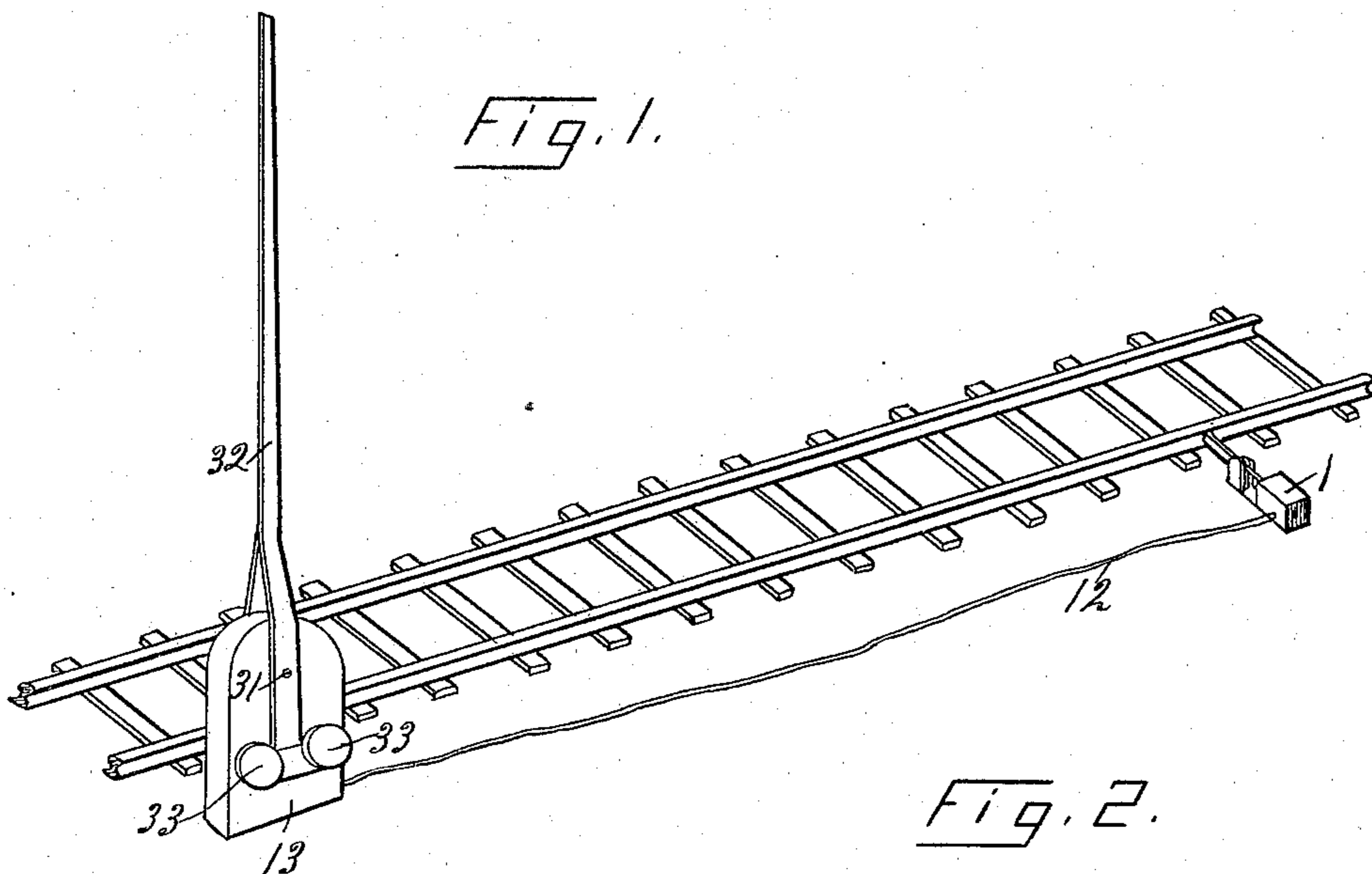
Patented Nov. 28, 1899.

R. J. TATHAM.
RAILWAY GATE.

(Application filed Mar. 18, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

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2 Sheets—Sheet 2.

Fig. 3.

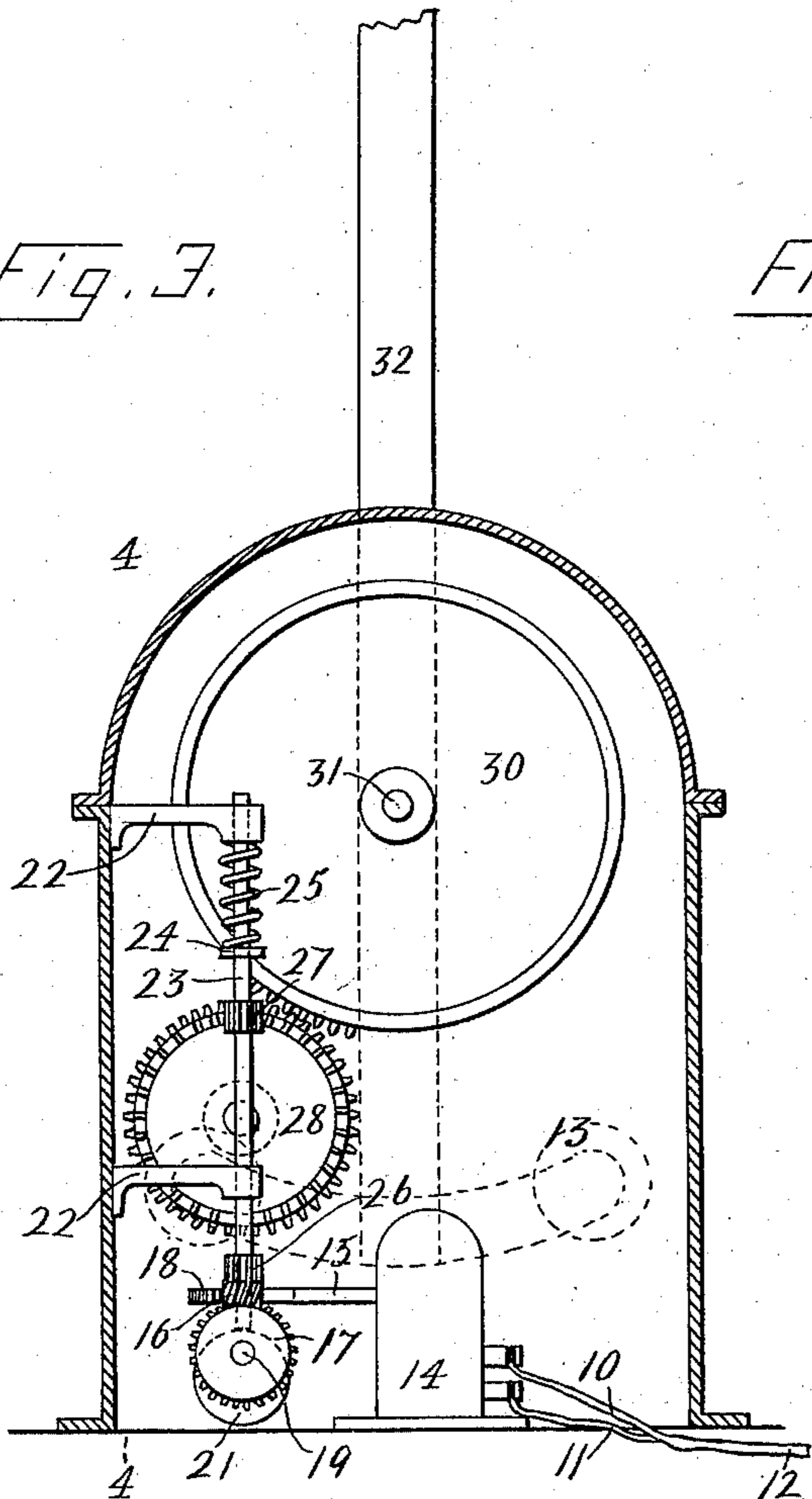
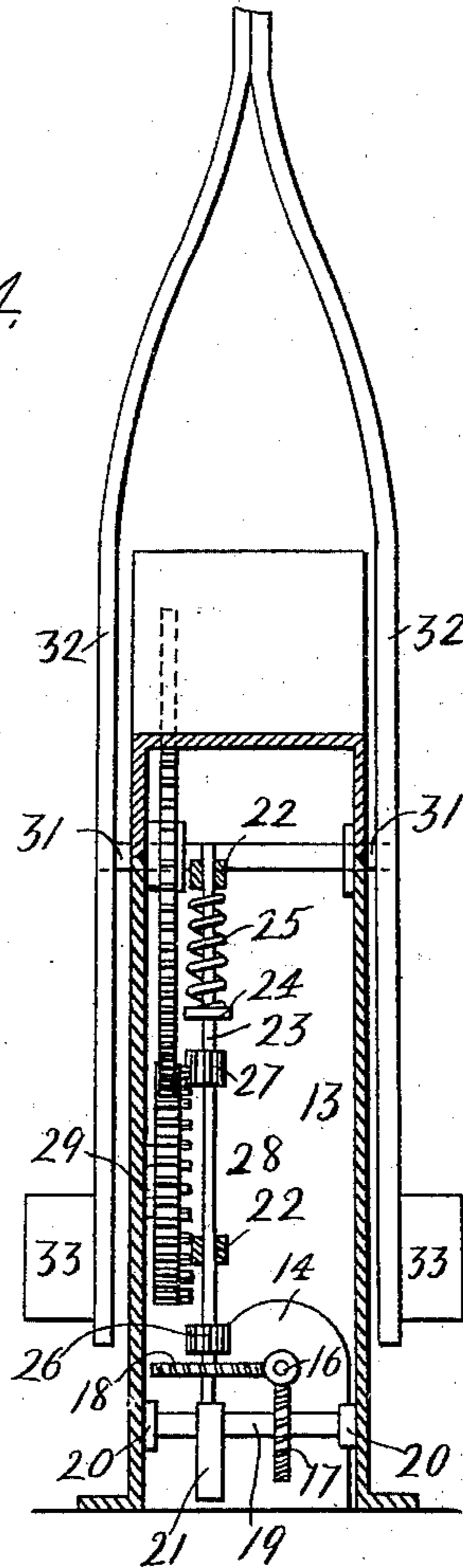


Fig. 4.



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UNITED STATES PATENT OFFICE.

RICHARD JOHN TATHAM, OF GARFIELD, NEW JERSEY.

RAILWAY-GATE.

SPECIFICATION forming part of Letters Patent No. 637,836, dated November 28, 1899.

Application filed March 18, 1899. Serial No. 709,565. (No model.)

To all whom it may concern:

Be it known that I, RICHARD JOHN TATHAM, a subject of the Queen of Great Britain, and a resident of Garfield, county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Railway-Gates, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar numerals of reference indicate corresponding parts.

This invention relates to an improvement in railway-gates, the object being to provide a device of this character which will be operated automatically by the passage of the train or locomotive by the crossing in connection with which the device is used.

At outlying crossings where gates are now used it is necessary for the railway to keep a man in attendance to operate the gates. This is a source of great expense to the railway companies, and the gates are usually supplied only at crossings where there is a great amount of traffic. Many crossings are left entirely unprotected, and these unprotected crossings are a constant source of danger. It is desirable that all such crossings should be protected, but the railway companies neglect to do so owing to the expense of keeping a gate-man in attendance.

My invention, which will be hereinafter fully described, and specifically set forth in the annexed claims, is designed to overcome the objections of the railway companies to the expense of attendance and to provide a simple automatic gate which will not require such attendance.

The invention consists in the employment of an electrically-controlled gate operated by the weight of the car or locomotive passing the crossing.

In the accompanying drawings, Figure 1 is a perspective view of a section of track, showing one gate and the circuit-closer in position. Fig. 2 is an enlarged detail, partly sectional, view of the circuit-closer. Fig. 3 is a sectional elevation of the gate-operating mechanism, and Fig. 4 is a sectional view on the line 4 4 of Fig. 3.

In applying my invention I employ a circuit-closer 1, embodying a base-plate 2, a standard 3 at one end of said plate, preferably formed

integrally therewith, and a housing 4, also preferably formed integrally with the base-plate 2 and of metal. A lever 5 is fulcrumed in the standard 3 and one end of said lever is in contact with the rail 6. The opposite end of said lever projects through a suitable slot 7 in the end wall of the housing 4 and is supplied with a contact-button 8, electrically connected therewith. A second contact-button 9 is mounted within the housing approximately to the button 8 and insulated from said housing. The inner end of the lever is longer and heavier than the end in contact with the rail, so that the buttons are normally held out of contact. Passage of the locomotive or train over the rail will depress the outer end of the lever 5 and bring the buttons 8 and 9 in contact, thus closing the circuit. Insulated wires 10 and 11 are connected with the lever 5 and the button 9, respectively, and are preferably inclosed in a suitable tube 12, covering both insulated wires outside of the housing.

The circuit-closer 1 is located at any desirable distance down the track from the crossing, and when used in connection with a single-track road a second circuit-closer is located at the same distance down the track in the opposite direction.

The tube 12, inclosing the wires, is led along the surface of the ground, buried in the ground or strung upon poles, as preferred, and terminates within the casing 13, where the wires 10 and 11 are separated and connected with an electric motor 14. A shaft 15, operated by said motor, is provided with a worm 16, which actuates the worm-wheels 17 and 18. The worm-wheel 17 is mounted upon a shaft 19, mounted in suitable journals 20 20, fixed to the side walls of the casing 13. A cam 21 is fixed upon a shaft 19 at a distance from the worm-wheel approximating the radius thereof. Brackets 22 22, fixed to one of the end walls of the casing, are adapted to support the vertical shaft 23, which is journaled in said brackets and adapted to slide vertically through them. A collar 24 is fixed upon said shaft below the upper bracket, and a spring 25, surrounding the said shaft and held between the collar 24 and the upper bracket, serves to press the shaft downward. The lower end of said shaft rests upon the periphery of the cam 21 and is held in con-

tact therewith by the action of the spring 25. A worm-wheel 18 is keyed loosely upon said shaft, so that the shaft may slide through said worm-wheel. A pinion 26 is fixed upon the
5 shaft immediately above the worm-wheel 18, and a second pinion 27 is fixed upon the shaft at a point a little below the collar 24.

A combined crown and spur-gear wheel 28 is mounted upon a journal 29, which is
10 fixed to the side wall of the casing, a line projected from its axis intersecting the center of the vertical shaft 23. The spur portion of this wheel is complete; but there are breaks at diametrically opposite points upon the
15 crown-gear, the purpose of which will be presently explained. Three teeth are broken out on one side and one or two upon the other. This wheel 28 meshes with the wheel 30, the diameter of which is twice that of the
20 wheel 28. The wheel 30 is fixed upon the shaft 31, which projects through the side walls of the casing and is supported therein by suitable journals. Fixed upon said shaft 31 outside of the casing are the gate mem-
25 bers 32 32, preferably constructed of wood. Balance-weights 33 33 are secured to the lower ends of these members.

In the operation of the device, the gate being in the upright position shown in the draw-
30 ings, the locomotive or train approaching the crossing operates the circuit-closer 1, the electricity being taken from a battery or from an overhead feed-wire, as preferred. As soon as the circuit is closed the motor 14 starts, revolving the shaft 15 and worm 16, which turns the worm-wheels 17 and 18 at a low rate of
35 speed. The worm-wheel 18 turns the vertical shaft 23 and through the medium of the pinion 27 turns the crown-wheel 28, which in turn, by means of its integral spur-gear, turns the wheel 30. A suitable governor connected with the motor 14 keeps the same in action until the wheel 28 has made a half-revolution, when the pinion will have reached that por-
40 tion of the crown-wheel where three teeth are broken out. The shaft 23 will continue to revolve, the pinions doing no work, the gate 32, having reached the horizontal position, locking the crossing. In the meantime the cam
45 21 has been slowly turning, and after the elapse of a predetermined time controlled by the governor the shaft 23, still revolving, will have been elevated until the pinion 27 is thrown out of mesh and the pinion 26 thrown
50 into mesh. As soon as the pinion 26 is thrown into mesh the wheel 28 will revolve in the opposite direction, raising the gate and continuing to revolve until the broken portion of the crown-gear reaches the pinion 26. The
55 gate 32 will have returned to its vertical po-

sition at this time and the governor of the motor will stop the same as soon as this point is reached.

A sound alarm, such as a bell, may be at-
65 tached to the device and operated automatically by the descent of the gate or, if preferred, a continuous alarm may be sounded electrically while the gate is coming down.

If at any time it should be found desirable or convenient, mechanical means for starting
70 and operating the motor may be substituted for the electrical device shown, but the latter is at this time preferred.

Having thus described my invention, what I claim as new, and desire to secure by Letters
75 Patent, is—

1. In a railway-gate, the combination of a casing, a shaft journaled therein and carrying a gear-wheel and gate-arms, a combined
80 crown and spur gear meshing with said spur-gear, said crown-gear having diametrically opposite interrupted portions, a vertical shaft having two pinions fixed thereon, and means operated by the passage of a car for throw-
85 ing said pinions alternately in mesh with the crown and spur gear, substantially as and for the purpose set forth.

2. In a railway-gate, the combination of a casing, a shaft journaled therein and carry-
90 ing a gear-wheel and gate-arms, a combined crown and spur gear meshing with said gear-wheel, said crown-gear being interrupted at diametrically opposite points, a cam-operated vertical shaft carrying pinions alternately in
95 mesh with said crown-gear, and means for revolving said shaft and said cam actuated by the passage of a car, substantially as described.

3. In a railway-gate, the combination of a casing, a shaft journaled therein and carry-
100 ing a gear-wheel and gate-arms, a combined crown and spur gear meshing with said gear-wheel, a spring-actuated vertical shaft carrying two pinions alternately in mesh with said
105 crown-gear, a cam in contact with the lower end of said vertical shaft, a worm-wheel slidably fixed upon said vertical shaft, a worm-wheel fixed upon the shaft of said cam, a motor-driven worm meshing with said worm-
110 wheels, and a circuit-closer operated by the passage of the train, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 6th day of Febru-
115 ary, 1899.

RICHARD JOHN TATHAM.

Witnesses:

DAVID H. SLINGERLAND,
ERNEST MASSEY.