

(No Model.)

2 Sheets—Sheet 1.

W. D. SHELDON.
RAILROAD GATE.

No. 441,032.

Patented Nov. 18, 1890.

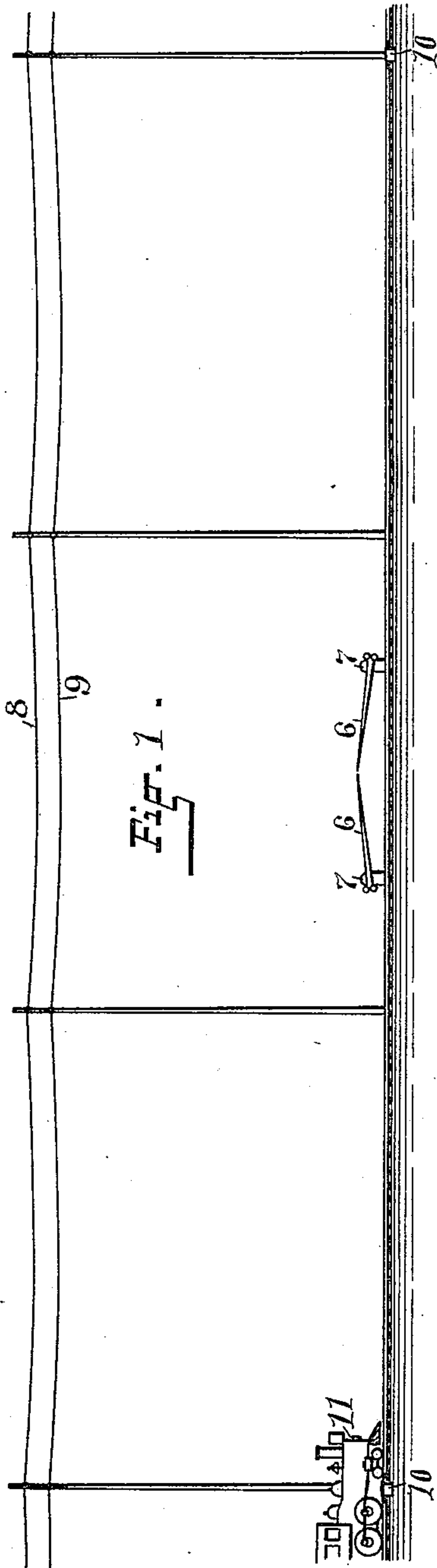


Fig. 1.

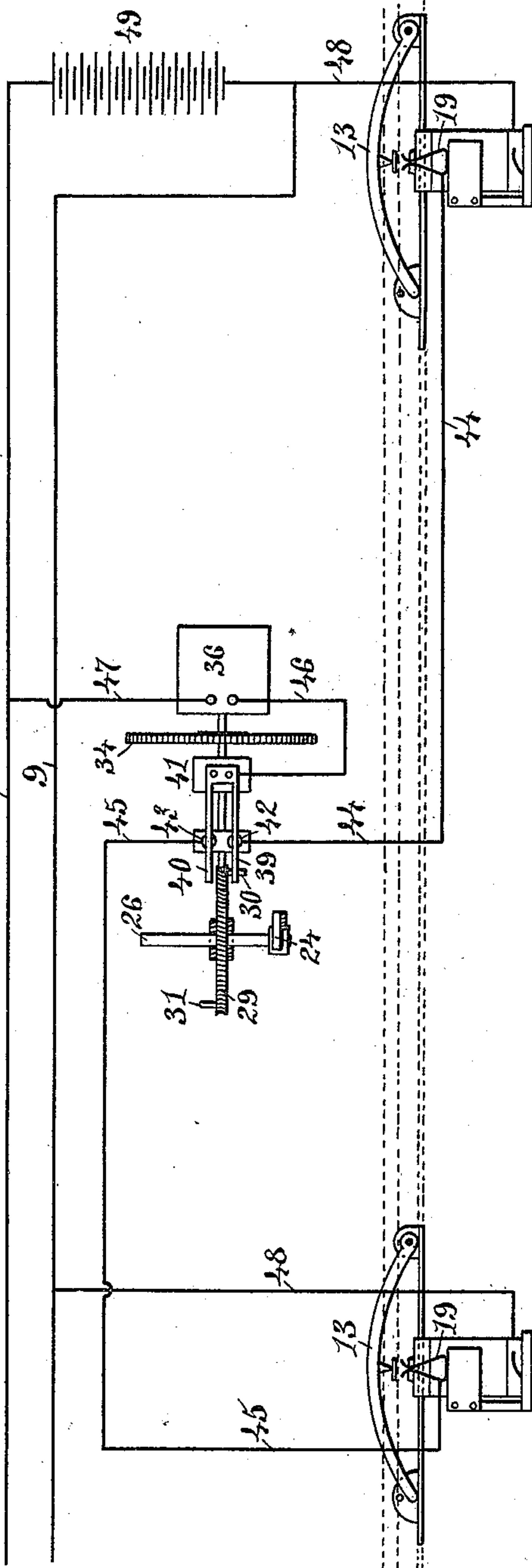


Fig. 2.

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Fig. 3.

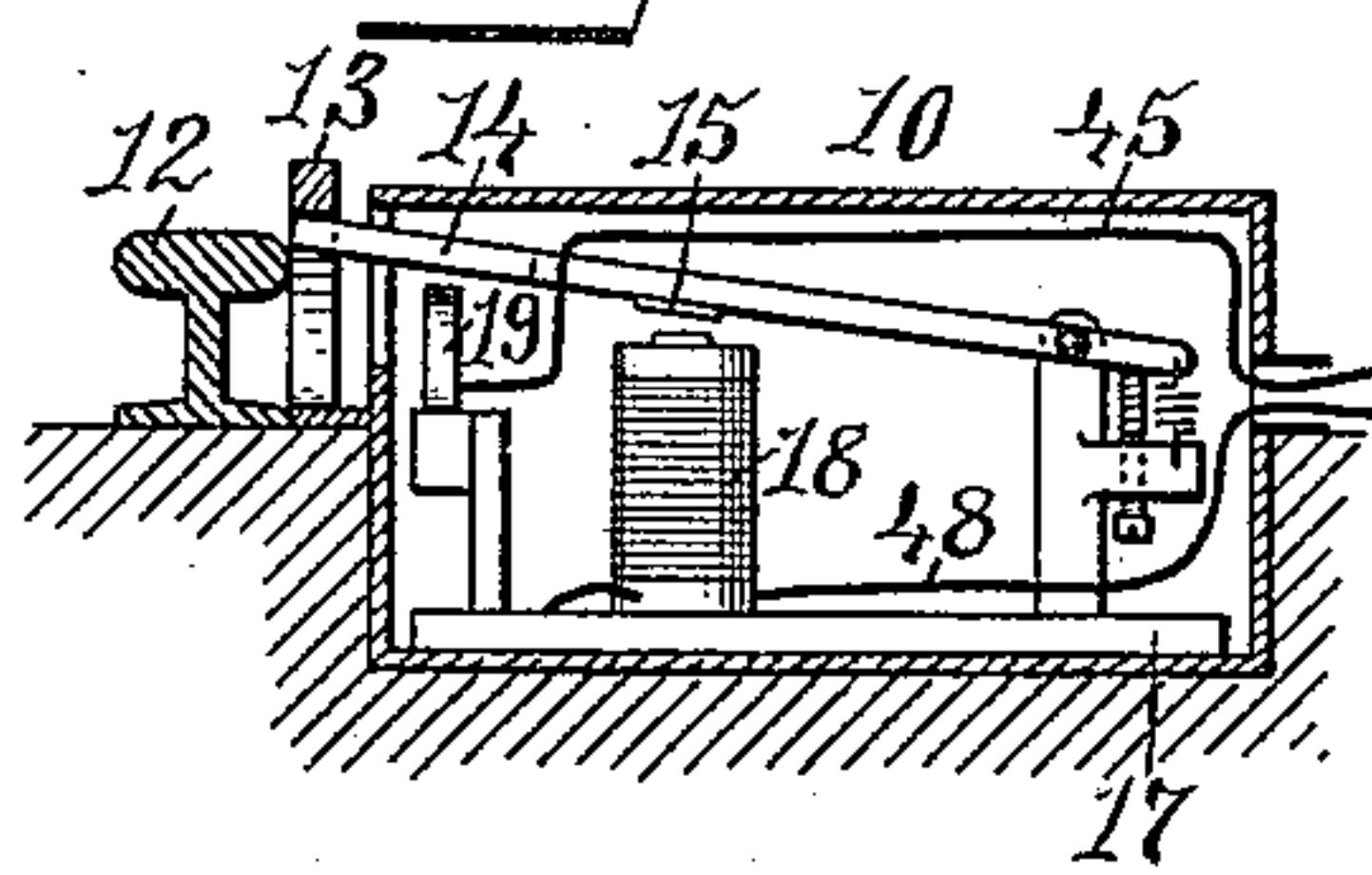


Fig. 4.

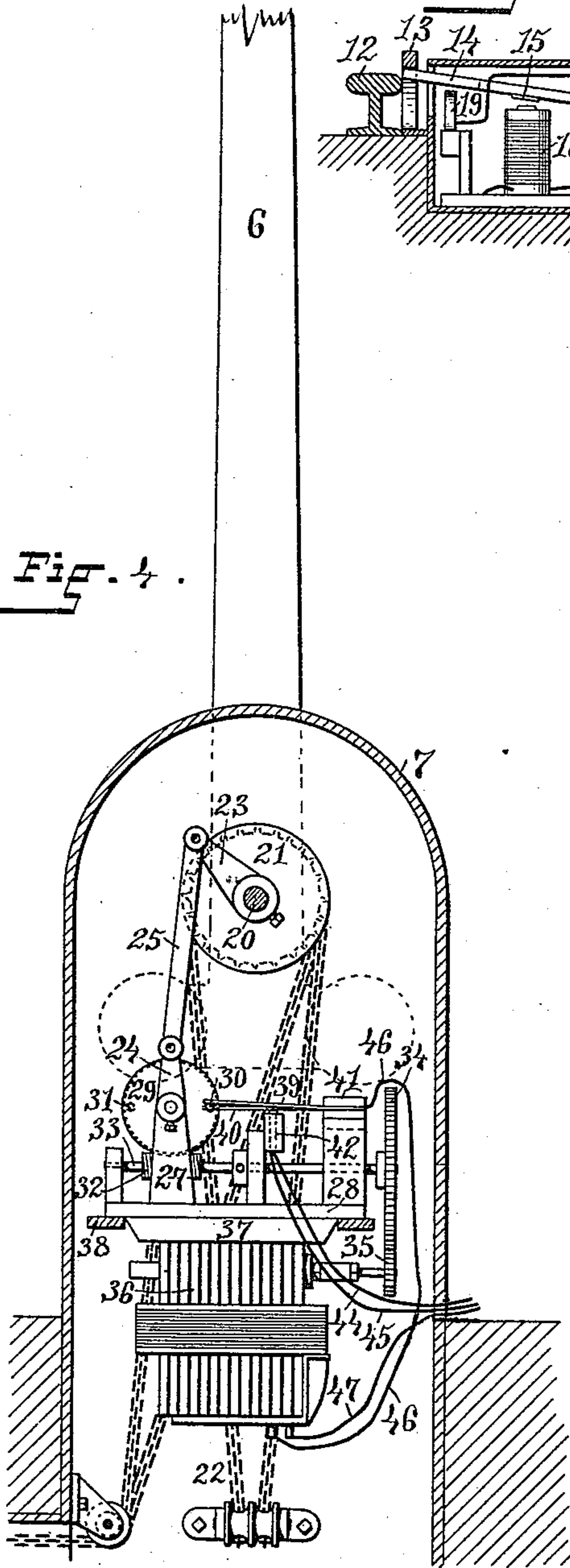
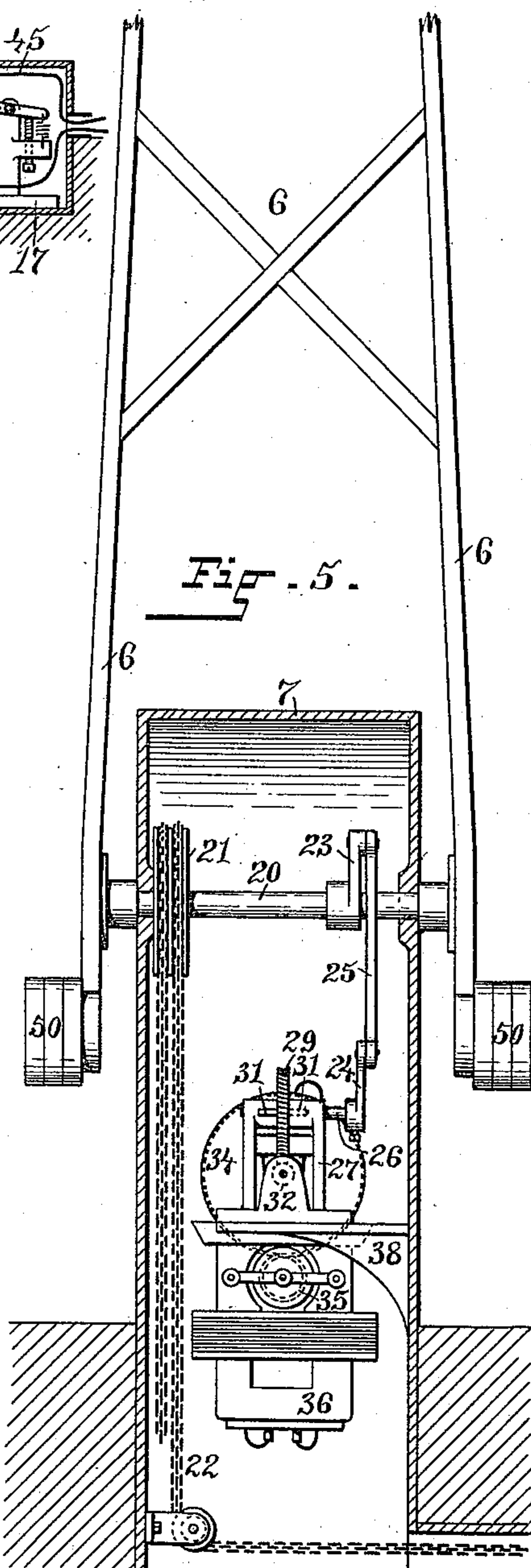


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM D. SHELDON, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO
NICHOLAS SHELDON, OF SAME PLACE.

RAILROAD-GATE.

SPECIFICATION forming part of Letters Patent No. 441,032, dated November 18, 1890.

Application filed September 20, 1889. Serial No. 324,537. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. SHELDON, of the city of Providence, in the county of Providence and State of Rhode Island, have
5 invented a new and useful Improvement in Railroad-Gates; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this
10 specification.

This invention has reference to an improved method for operating the gates at railroad-crossings automatically by the trains; and it consists in the peculiar construction, arrange-
15 ment, and combination of parts by which the gate or gates on one or both sides of a railroad are operated by means of an electric motor connected with two or more circuit-closers by which the electric motor is connected with the
20 main circuit automatically, as will be more fully set forth hereinafter.

Figure 1 is a longitudinal view of a railroad provided with a gate. Fig. 2 is a plan view showing the circuit-closer-operating de-
25 vices, the gate-operating mechanism, and the electric conductor-wires connecting the switches and the operating mechanism with the main circuit and with the source of electric energy. Fig. 3 is a view of the apparatus
30 and the case in which it is contained, the rail and the operating-arm being shown in section. Fig. 4 is a sectional view of the case containing the gate-operating mechanism, showing the electric motor and mechanism for
35 operating the gate by the electric motor. Fig. 5 is a cross-section of the gate-standard, showing the connection with the shaft supporting and operating the gate of the electric motor and mechanism connecting the said shaft
40 with the motor to operate the gate.

Similar numerals of reference indicate corresponding parts.

Vertically-swinging gates usually connected by underground connections, so that two or
45 more gates are operated simultaneously, are in use on most railroads. The closing of these gates at the railroad-crossings requires the presence of the gateman at all times, and also requires such care and watchfulness on his
50 part as are rarely found in a man whose labor is but poorly remunerated.

The object of this invention is to secure the prompt closing of the gate on the approach of a passing train and the opening of the same automatically by the train.

In the drawings, the number 6 indicates the gate-arms swinging in a vertical plane and supported on shafts journaled in the posts 7.

8 is an electric conductor-wire forming one arm of an electric circuit connected with a
60 dynamo or other source of electric energy, and 9 is the conductor-wire forming the other arm of the circuit.

10 are the circuit-closers placed near one of the rails of a railroad at such a distance on
65 each side from the gate as will cause the gate or gates to be closed before the train reaches the gate. Where more than one track extends between the opposite gates, each track is provided with the two circuit-closers 10,
70 and all the closers are connected with an electric motor, by which the gates are operated.

11 is a locomotive shown in the act of passing over one of the circuit-closer-operating arms. The closer is shown in Fig. 3, in which
75 10 is the case containing the circuit-closer.

12 is the rail and 13 a spring-arm hinged at one end and bearing on a plate at the opposite end.

14 is a lever provided with the armature 15
80 and hinged in the standard 16, secured to the metal bed-plate 17.

18 is an electro-magnet, and 19 insulated spring contact-points. The short arm of the lever 14, projecting beyond the standard 16,
85 is connected by a coiled spring with a projection of the standard, in which also a screw forms an adjustable stop for the lever 14. The contact-springs 19 and the electro-magnet are connected with conductor-wires, so
90 that on a train passing over the spring-arm 13 the lever 14 enters between the contact-springs 19, closing the circuit, and the electro-magnet 18 holds the lever in the closed position until the circuit is broken.

The circuit-closer and the operating-arm are more fully described in an application for a patent for railroad-signals, Serial No. 324,536,
95 filed by me at the same time as the present application.

Referring now to Figs. 4 and 5, the gate-
100 shaft 20 is shown provided with the sprocket-

wheels 21, over which the chains 22 pass and extend over a sheave or sheaves in the lower part of the case, connecting the gate-shaft of one gate with the shafts of one or more other gates, so as to operate two or more gates simultaneously. The gate-arm 20 is provided with the crank 23, and this crank is connected with the crank 24 by the connecting-link 25. The crank 24 is secured to the shaft 26, journaled in the frame 27, extending from the bed-plate 28, and mounted on the shaft 26 is the worm-gear 29. One face of the worm-gear is provided with the pin 30, and on the opposite face of the worm-gear the pin 31 is placed on a line with the pin 30 and the center of the shaft 26. The worm-gear 29 gears with the worm 32, secured on the shaft 33, which shaft is supported in bearings formed in standards projecting from the bed-plate 28. The gear-wheel 34 is secured to the shaft 33 and gears with the pinion 35 on the shaft of the electromotor 36. The base 37 of the electromotor 36 is secured to the base 28, and this base is secured to the brackets 38. The spring-arms 39 and 40 are secured to the standard 41 and extend to the sides of the worm-wheel 29, so as to come in contact with the pins 30 and 31. The spring-arms 39 and 40 rest in their normal position on the contact-posts 42 and 43. The contact-post 42 is connected by the conductor-wire 44 with the contact-springs 19 of one circuit-closer, and the contact-post 43 is connected by the conductor-wire 45 with the contact-springs 19 of the opposite circuit-closer, and the contact-posts are connected through the spring-arms 39 and 40, and the conductor-wire 46 with one pole of the electromotor, the other pole being connected by the conductor-wire 47 with the arm 8 of the main circuit. The arm 9 of the circuit is connected with the electro-magnet and the circuit-closer frame by the conductor-wire 48. 49 indicates the dynamo or other source of electric energy.

The operation of this system for operating railroad-gates is as follows: A train approaching a railroad-crossing provided with a gate on passing over the curved arm 13 depresses the center of the arm and brings the lever 14 in contact with the spring-contacts, thus closing the circuit between the conductor-wire 48 and wire 44, thus connecting the motor with both arms 8 and 9 of the main circuit and starting the motor, which, through the pinion 35, gear-wheel 34, worm 32, and worm-gear 29, turns the shaft 26, and, through the crank 24, connecting-rod 25, and crank 23, turns the gate-shaft 20, and with the same the gate-arms from the horizontal to the vertical position. When the predetermined position of the gate-arms is reached, the pin 30 raises the spring-arm 39 off from the contact-post 42, breaking the circuit and stopping the motor. When, now, the train has passed by the gate and reaches the arm 13 beyond the gate, the circuit is closed again; but the connection is made through the contact-post

43 and arm 40. The motor is started and continues the rotation of the shaft 26 until the gate is lowered, when, on reaching this predetermined position, the pin 31 raises the spring-arm 40 off from the contact-post 43, breaking the circuit and stopping the motor. Half a revolution of the worm-wheel raises and the next half of the revolution lowers the gate-arms. As the gate-arms are balanced by the weight 50, the power required to operate the gate is not excessive.

The particular location in respect to each other of the motor and the gate-operating mechanism, supported as they are in line with each other from a single bed-plate, effects a greater economy of room, simplifies the connecting mechanism, and is accompanied by a corresponding reduction in expense.

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

1. The combination, with a railroad-track and a railroad-gate, of a bed-plate, gear mechanism for operating the gate secured to one side of the bed-plate, an electromotor for actuating the gear mechanism secured to the other side of the bed-plate in line with the gear mechanism, an inclosing post within which the bed-plate is suspended, and suitable electrical connections whereby on the passage of a train the motor is caused to operate the gate, as described.

2. The combination, with a railroad-track and a railroad-gate, of a post, a bed-plate supported by brackets within the post, gear mechanism for operating the gate secured to one side of the bed-plate, an electromotor for actuating the gear mechanism secured to the other side of the bed-plate in line with the gear mechanism, circuit-breakers secured to said bed-plate and operated by the motor, circuit-closers operated by the passing train to close and open the gate automatically, and suitable electrical connections, as described.

3. The combination, with the inclosing-case 7 and the gate-arm 20, of the bed-plate 37, the supporting-bracket 38, the motor 36, suspended from the bed-plate, the shaft of the motor and its pinion 35, and mechanism intermediate between the pinion 35 and the gate-arm, said mechanism being secured to the bed-plate vertically in line above the motor, whereby when the motor is operated the gate is actuated, as described.

4. The combination, with the electric motor 36 and mechanism for rotating the shaft 26, of the pins 30 and 31, the spring-arms 39 and 40, the contact-posts 42 and 43, connections with the circuit and the switches, and the crank 24, connecting-rod 25, and crank 23, secured to the shaft 20 of the gate, as described.

5. The combination, with a gate having connections by which other gates are operated, of an electromotor connected by mechanism, substantially as described, with the

gate-operating mechanism, two or more de-
vices operated automatically to close the cir-
cuit with the motor by the passage of a train
by one of them, two automatic circuit-break-
5 ers, consisting of the pins 30 and 31, the
spring-arms 39 and 40, and the contact-posts
42 and 43, operated by the motor and con-
nections between the motor, the circuit-clos-
ers and the main circuit constructed to close

the gates on both sides of the track on the 10
approach of a train and open the same after
the train has passed the gates automatically,
as described.

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Witnesses:

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