

(No Model.)

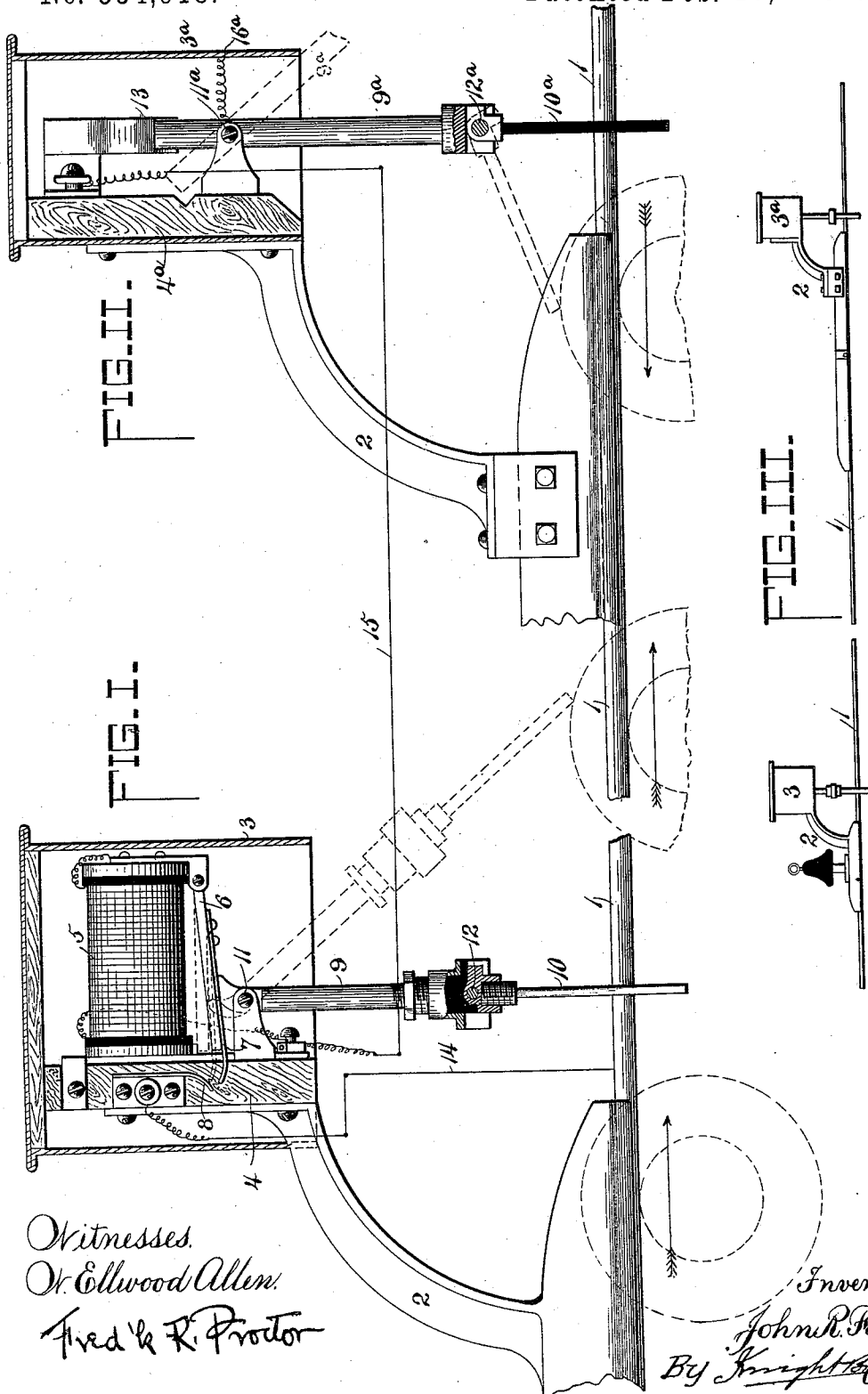
2 Sheets—Sheet 1.

J. R. FARMER.

ELECTRIC CIRCUIT CLOSER AND BREAKER.

No. 554,918.

Patented Feb. 18, 1896.



Witnessed.
Dr. Ellwood Allen.
Fred & R. Proctor

Inventor.
John R. Farmer
By Knight & Co. Attys.

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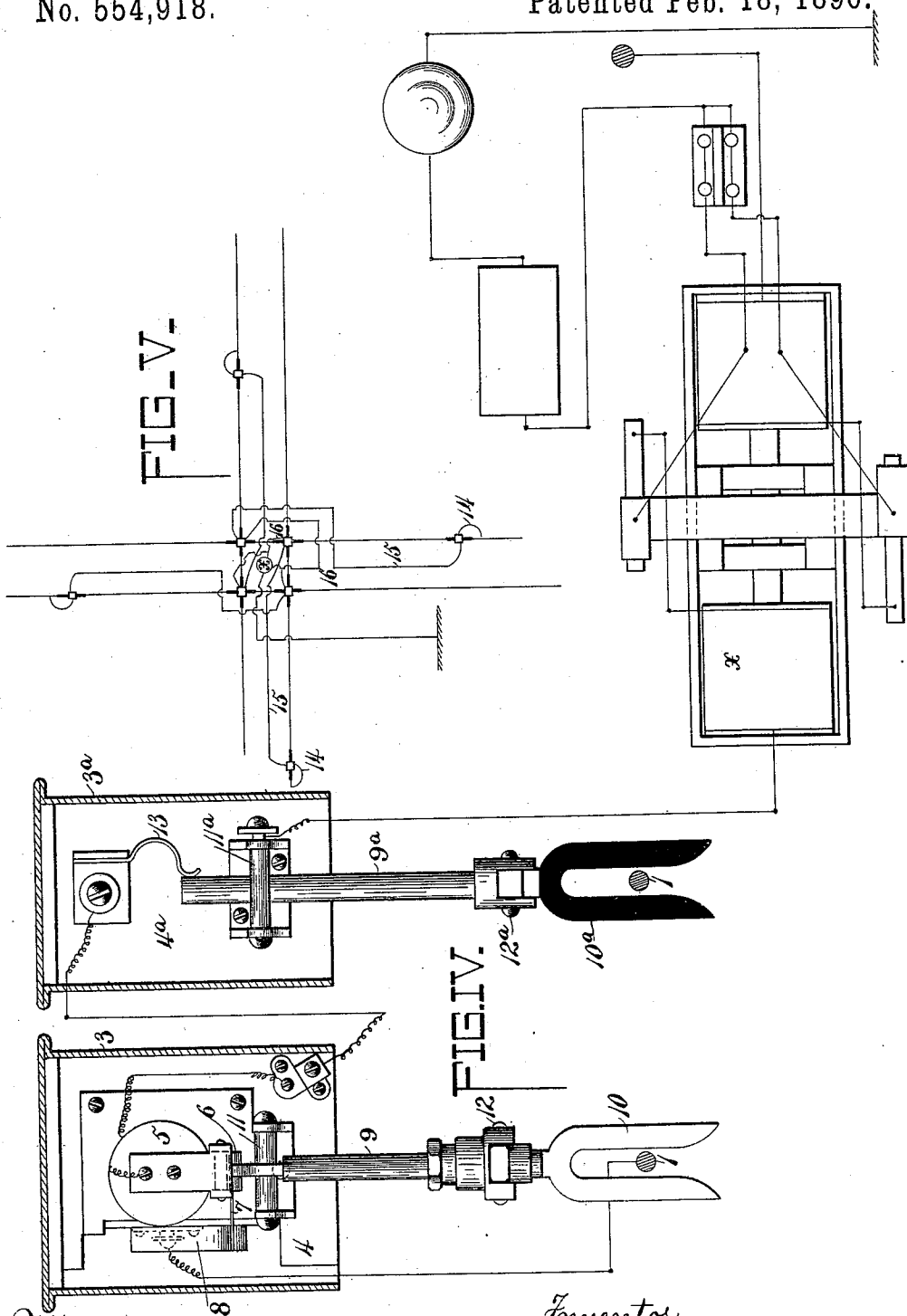
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UNITED STATES PATENT OFFICE.

JOHN R. FARMER, OF ST. LOUIS, MISSOURI, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE FARMER ELECTRIC COMPANY, OF MISSOURI.

ELECTRIC-CIRCUIT CLOSER AND BREAKER.

SPECIFICATION forming part of Letters Patent No. 554,918, dated February 18, 1896.

Application filed May 25, 1894. Serial No. 512,470. (No model.)

To all whom it may concern:

Be it known that I, JOHN R. FARMER, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Electric-Circuit Closers and Breakers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This invention has for its object to provide a means for closing and breaking the electric circuit used in connection with electric signal-lamps at the junction of electric railways, and more especially such signal-lamps as are
15 shown in my prior application for patent, Serial No. 506,797.

My invention consists in features of novelty hereinafter fully described and pointed out in the claims.

20 Figure I is a side view of the circuit-closer, the casing being shown in section to display the inside works. Fig. II is a similar view of the circuit-breaker. Fig. III is a side elevation showing the relative positions of the circuit closer and breaker to the hangers for the
25 trolley-wire. Fig. IV is a view showing the circuit closer and breaker in vertical cross-section and the system of connection with the electric signal-lamp. Fig. V is a plat of a
30 system for connecting the wires leading from the circuit closer and breaker to the signal-lamp.

Referring to the drawings, 1 represents the trolley-wire of the electric railway. Upon
35 the hanger of the trolley-wire some distance ahead of the junction there is secured by an arm 2 a casing 3, which contains the circuit-closer. Within this case 3 there is a vertical partition 4, to which is secured the mechanism of the circuit-closer. This mechanism
40 consists essentially of an electromagnet 5, mounted upon the partition 4. To the outer end of the electromagnet 5 there is hinged an armature 6, which can swing up and down
45 upon the lower side of the magnet and lies parallel with the core thereof. Secured to the hinged armature 6 is a metal spring 7, which is in contact with another spring, 8, when the armature is attracted to the mag-
50 net. Below the armature 6 there depends a

rod 9, which terminates at its lower end in a fork 10 having two prongs, one of which extends down on either side of the trolley-wire. This rod 9 is pivoted near the armature 6 on a pivot 11, the rod extending above the pivot
55 and terminating in a cam end 9^a, curved away from the partition 4. The prong part of the fork 10 is hinged to the rod 9 and provided with a small lug, which meets a shoulder on one side, so that when the trolley-wheel of
60 the car passes along the trolley in the normal direction it impinges against the fork 10 and carries the rod 9 into the position shown in the dotted lines in Fig. I. If, however, by
65 any chance the car should be moving backward, the fork 10 would move on its hinge in a position indicated in dotted lines in Fig. II, in this way not disturbing the position of the mechanism within the case 3.

When the rod 9 is moved into the position
70 shown in dotted lines, Fig. I, the cam extension above the pivot 11 raises the armature 6 and causes the spring 7 to come in contact with the spring 8. This contact of the springs
75 7 and 8 closes an electric circuit through the magnet 5. The force of the magnet then maintains the armature 6 in its upper position and holds the spring 7 against the spring 8. This will continue until the electric circuit
80 is broken.

Just past the junction of the trolley-wires there is secured to the hanger by an arm 2^a a casing 3^a, in which is contained the circuit-breaking mechanism, which consists essentially of a depending rod 9^a, to which is se-
85 cured a two-pronged fork 10^a, which straddles the trolley-wire in the same manner as the fork in the case of the circuit-closer. This fork is hinged to the rod 9^a by a pivot 12^a, as was done, in the case of the circuit-closer.
90

Secured to the vertical partition 4^a is a contact-spring 13. When the hinged rod 9^a is in its normal position, it is in contact with this spring. When the trolley-wheel of the car
95 passes along and strikes the fork 10^a, it swings the rod 9^a into the position shown in dotted lines in Fig. II, thereby breaking the contact between this rod 9^a and the spring 13.

The electromagnet 5 is brought into the electric circuit in the following way: A wire
100

14 leads from the feed-wire or the trolley-line to the spring 8. When the armature 6 is raised the spring 7 makes a contact with the spring 8 and the armature 6 is connected directly to the coil around the electromagnet 5. From this coil a wire 15 leads to the spring 13 in the circuit-breaker. This spring being in contact with the vertical rod 9^a and a wire 16 is connected to the pivot 11^a, upon which the rod 9^a turns. This wire 16 leads to a signal-lamp α . The car approaching the junction will first cause its trolley-wheel to swing the rod 9 into the position shown in dotted lines in Fig. I, thereby closing the circuit through the electromagnet and the wire 15. From there it will go straight to the lamp through the wire 16. The car approaches the junction and passes it, when it will raise the rod 9^a into the position shown in dotted lines in Fig. II, thereby breaking the contact between the rod 9^a and the spring 13 and so breaking the circuit through the lamp. The circuit being once broken, the armature 6 in the circuit falls back to its normal position, as shown in

Fig. I. In this position the signal-lamp is not operative.

I claim as my invention—

1. In a circuit-closer, the combination of the electromagnet having an armature connected to the controlling-circuit, and a pivoted operating-arm 9 extending down into working relation with the trolley and terminating above its pivot in a cam end 9^a arranged to bear against the armature and force it into position for closing the circuit as explained.

2. In a circuit-closer, the combination of an electromagnet, an armature hinged to one end of the magnet and extending along to the opposite end thereof, contacts mounted on the armature and on a fixed part of the device and the pivoted cam-lever engaging the armature substantially as shown and for the purpose set forth.

JOHN R. FARMER.

In presence of—

A. M. EBERSOLE,
E. S. KNIGHT.