J. Y. PORTER.

ELECTRICALLY ACTUATED TRAIN SWITCH.

APPLICATION FILED DEC. 10, 1908.

939,626. Patented Nov. 9, 1909.

3 SHEETS—SHEET 1.

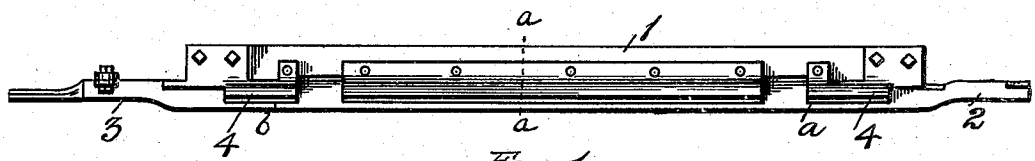

Fig. 1.

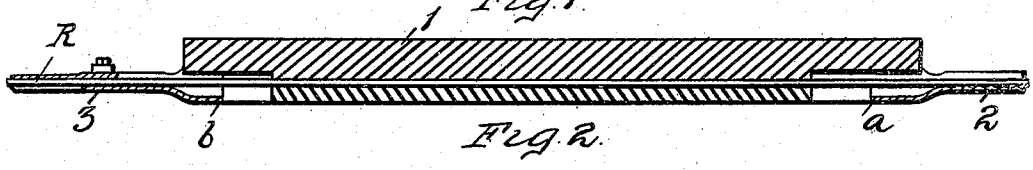

Fig. 2.

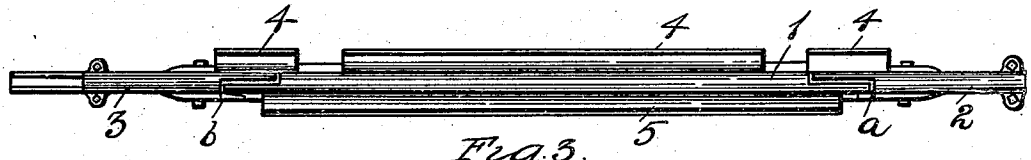

Fig. 3.

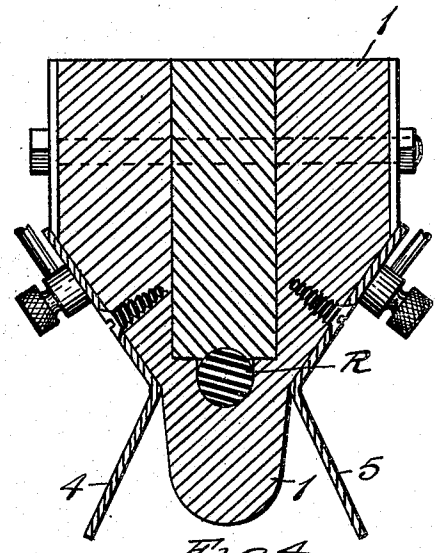

Fig. 4.

WITNESSES

Clarence E. Day

Alecia Townsend.

INVENTOR

Joseph Y. Porter

By Parker & Burton

Attorneys.

J. Y. PORTER.

ELECTRICALLY ACTUATED TRAIN SWITCH.

APPLICATION FILED DEC. 10, 1908.

939,626.

Patented Nov. 9, 1909.

3 SHEETS—SHEET 2.

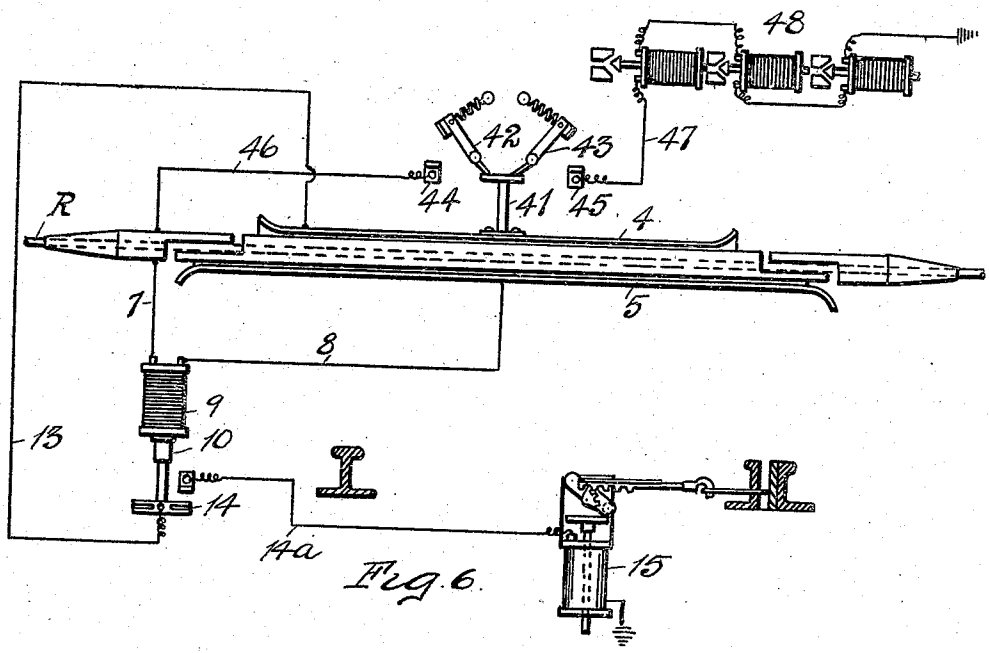

Fig. 6.

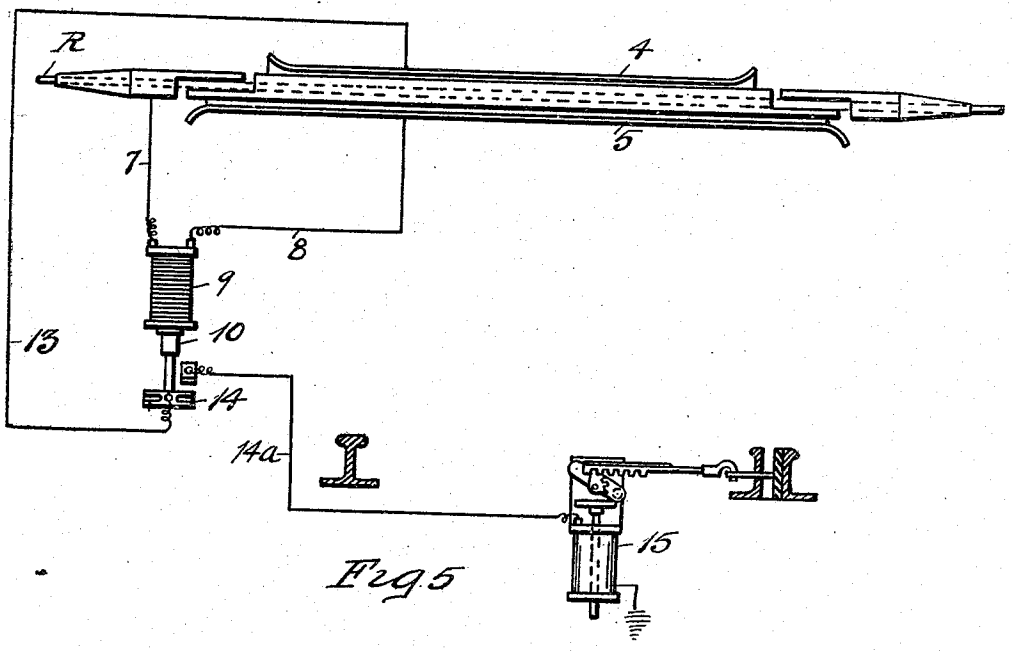

Fig 5

Witnesses

Clarence E. Day

Alicia Townsend.

Inventor

Joseph Y. Porter

By Parker & Burton

Attorneys

J. Y. PORTER.

ELECTRICALLY ACTUATED TRAIN SWITCH.

APPLICATION FILED DEC. 10, 1908.

939,626.

Patented Nov. 9, 1909.

3 SHEETS—SHEET 3.

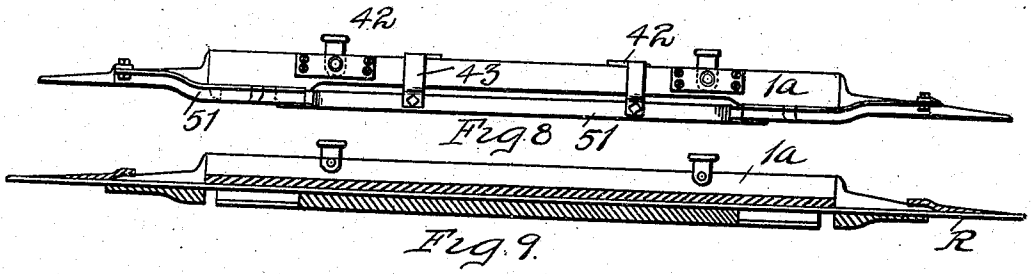

Fig. 8

Fig. 9.

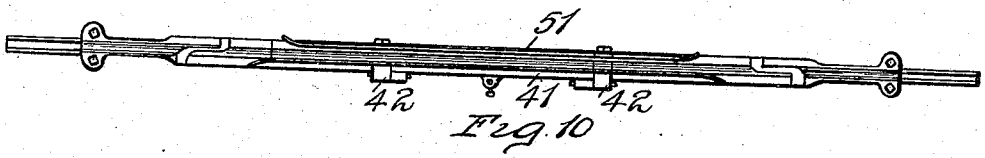

Fig. 10

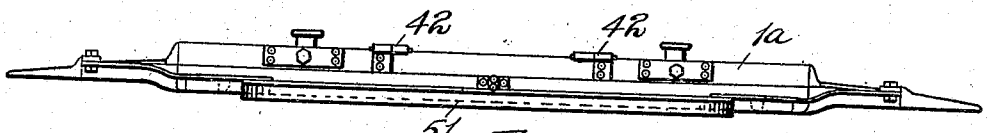

Fig. 11.

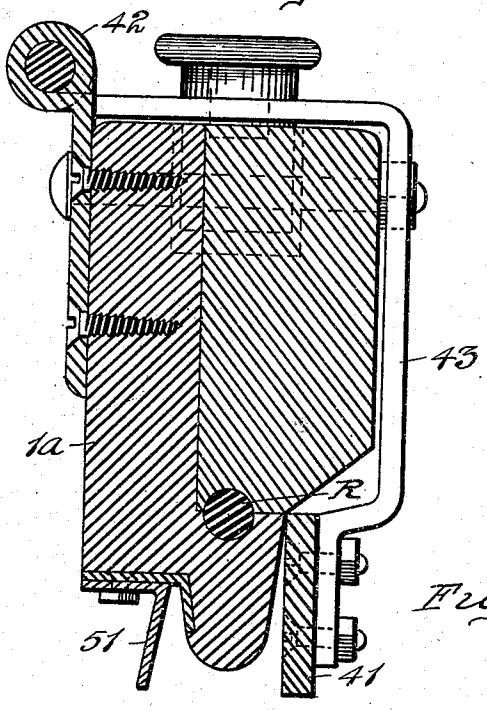

Fig. 7.

Witnesses:

Clarence E. Day

Alecia Townsend.

Inventor

By his Attorneys Joseph Y. Porter

Parker & Burton

UNITED STATES PATENT OFFICE.

JOSEPH Y. PORTER, OF DETROIT, MICHIGAN.

ELECTRICALLY-ACTUATED TRAIN-SWITCH.

939,626. Specification of Letters Patent. Patented Nov. 9, 1909.

Application filed December 10, 1908. Serial No. 466,766.

To all whom it may concern:

Be it known that I, JOSEPH Y. PORTER, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Electrically-Actuated Train-Switches, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to electrically actuated train switches.

It has for its object an improved form of bridge, adapted to be interposed along the trolley line of a trolley road, for the purpose of enabling the motorman on the trolley car or utilize the trolley current for the purpose of shifting the point of a track switch, and placing it within the power of the motorman to shift the point of the track switch or to leave it unmoved as may be suitable for the course he desires the car to take at the turnout.

In the drawings:—Figure 1, is an elevation of the bridge. Fig. 2, is a longitudinal section of the same. Fig. 3, is a view of the bridge, as seen from below. Fig. 4, is a cross section on an enlarged scale, at the line *a*—*a* of Fig. 1. Fig. 5, is a diagram, showing the wiring and connections of a solenoid. Fig. 6, is a diagram, showing the wiring and connections to a solenoid and to an auxiliary motor, used for signaling or similar purposes. Fig. 7, is a cross section of a bridge, in which one hanger is in hinged relation to the insulating member. Fig. 8, is a side elevation of a complete hanger of this character. Fig. 9, is a vertical longitudinal section. Fig. 10, is a view of the hanger, as seen from below. Fig. 11, is a side elevation reverse to the view shown in Fig. 8.

The invention is embodied in a structure, in which a continuation lead wire for electrical or trolley purposes is used in connection with the bridge, onto which the trolley may run, leaving the main electric conducting wire. The bridge is provided with contact members, by which the current may be taken from the main lead wire, and directed not only to the motor on the car, but also to local motors to which is delivered the requisite power for throwing tramway switches, or for setting signals, or for both. Provision is made by which the current is maintained through the motor on the car, at the same time that some part of it is taken for these auxiliary purposes. The main lead wire R is carried over an insulating member 1, which through a portion of the length of the bridge, prevents the trolley wheel from coming into direct contact with the lead wire. The ends of the bridge 2 and 3 are made of electric conducting material. At *a* and *b* the end conductors of the bridge terminate, but instead of terminating at a plane at right angles to the general axis of the bridge, they terminate with parts that overlap, but are not in electrical contact with a member 4 secured to the insulating member of the bridge, so that a full and complete contact between the trolley wheel is made with the member 4 before the contact has been broken between the trolley wheel and the end piece; this prevents the heavy sparking that would occur were the transition from one part to the other sudden and abrupt. The member 4 is on the opposite side of the bridge, but laps by a hanger 5, that makes, with the insulating member, a deep groove, in which the flange of the trolley wheel runs. The hanger 5 is an electrical circuit, with the main conductor R to which it is connected by means of a conductor 7 and 8 (seen in Figs. 5 and 6); the conductor 7 and 8 has interposed in its course a solenoid 9, that actuates the solenoid core 10 when the trolley wheel furnishes a ground connection, and completes the circuit from R through the hanger 5, and the trolley wheel, to the ground through to the car. When the car is on the bridge, with the trolley in position to contact both the hangers 4 and 5, some part of the current passes first through the lines 7 and 8, provided it can get through the motor to the car, that is, provided the current is turned onto the motor, actuates the solenoid core 10, lifts the contact terminal 14 of the conductor 13, furnishes a circuit now from the hanger 4 through the wire 13, through the wire 14^a, and actuates the train switch motor 15. If the current is turned off from the car, it runs by the bridge without actuating the switch point.

The hanger 4 is shown in Fig. 6 as hinged to the bridge 1, and the trolley wheel forces it somewhat away, swinging the arm 41 outward, and swinging terminals or contact

members 42 and 43 into connection with terminals 44 and 45; 44 terminates a wire 46, which leads from the main wire R, and 46 terminates a wire 47 which leads to and through motors 48. These latter motors are utilized for signaling purposes, or any similar purpose, and they may be made of indefinite number, and by their arrangement may be made to show at a distance from the bridge the time of passage of a car thereover.

In the form of hanger shown in Figs. 7 to 11, the insulating body 1^a has secured to it a hanger 51, similar to the hanger 5 of the first described bridge, and the hanger 41, which performs the function of the hanger 4, and also is adapted to swing on the hinge 42 in order that circuit may be completed through auxiliary motors for signaling or similar purposes. The contact bar 41 is a narrow longitudinal bar, supported by hinge arms 43. The lead wire R in both cases is entirely covered by the insulating material, of which the main part 1 of the bridge is constructed. Generally this is prepared wood. In both cases it will be noticed, that the lead wire is carried through the bridge without bending it, maintaining its straight and normally horizontal condition at both ends of the bridge to which it is clamped by the material of the bridge itself. The trolley, in running under the bridge, is compelled to dip slightly as it travels along that part of the bridge which forms its path, and which, while not in electrical contact with those parts that are utilized for shunting off some part of the circuit for auxiliary purposes, is in constant electrical contact with the main lead wire, and the current is conducted through it, through the flanges of the trolley wheel to the members that are utilized for shunting some part of the circuit for auxiliary use.

What I claim is:—

1. In combination with a bridge piece, provided with electrical carrying terminals and a central part insulated therefrom and adapted to carry a main wire over the insulated part, an electrical conducting plate secured to the insulated central part, a second electrical conducting plate in hinged relation to the central insulating part, adapted to be brought into electrical contact with the trolley wheel, substantially as described.

2. A bridge piece adapted to form a continuation of the running wire for a trolley wheel, and to carry the conductor wire over said bridge and thereby furnish a section of the running track electrically insulated from the conducting wire, an electrical conductor plate secured to the insulated part, a second electrical conductor hinged to the insulated part and adapted to hang in close relation to the trolley wheel traveling the conductor plate on said insulated part and motor elements in electrical connection with said hinged conductor whereby said motor elements may be actuated by a current passing through the trolley wheel, substantially as described.

3. The combination with a bridge piece, provided with electrical conducting terminals, an insulating central piece having a partial facing of electrical conducting material, a hanging member of electrical conducting material adapted to hang in contact with the trolley wheel running said facing, a conductor leading from said hanger through an intermediate motor to the ground, and an electrical conductor leading from the main wire and making electrical contact with said facing, substantially as described.

4. A bridge for trolley roads, having in combination an insulating section adapted to cover the main wire, overlapping plates arranged on opposite sides of said insulating section, and electrical connections normally discontinuous but adapted to be made continuous by a trolley wheel interposed between sections thereof, substantially as described.

5. A trolley bridge, having in combination an insulating portion adapted to engage the lead wire in its normally straight condition, an insulating portion adapted to force the trolley wheel downward below the lead wire, a constant circuit contact bar parallel with the lead wire, an intermittent circuit conducting bar insulated from the constant circuit, contact bar adapted to be brought into circuit with the trolley wheel, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

JOSEPH Y. PORTER.

Witnesses:
ALECIA TOWNSEND,
WILLIAM M. SWAN.