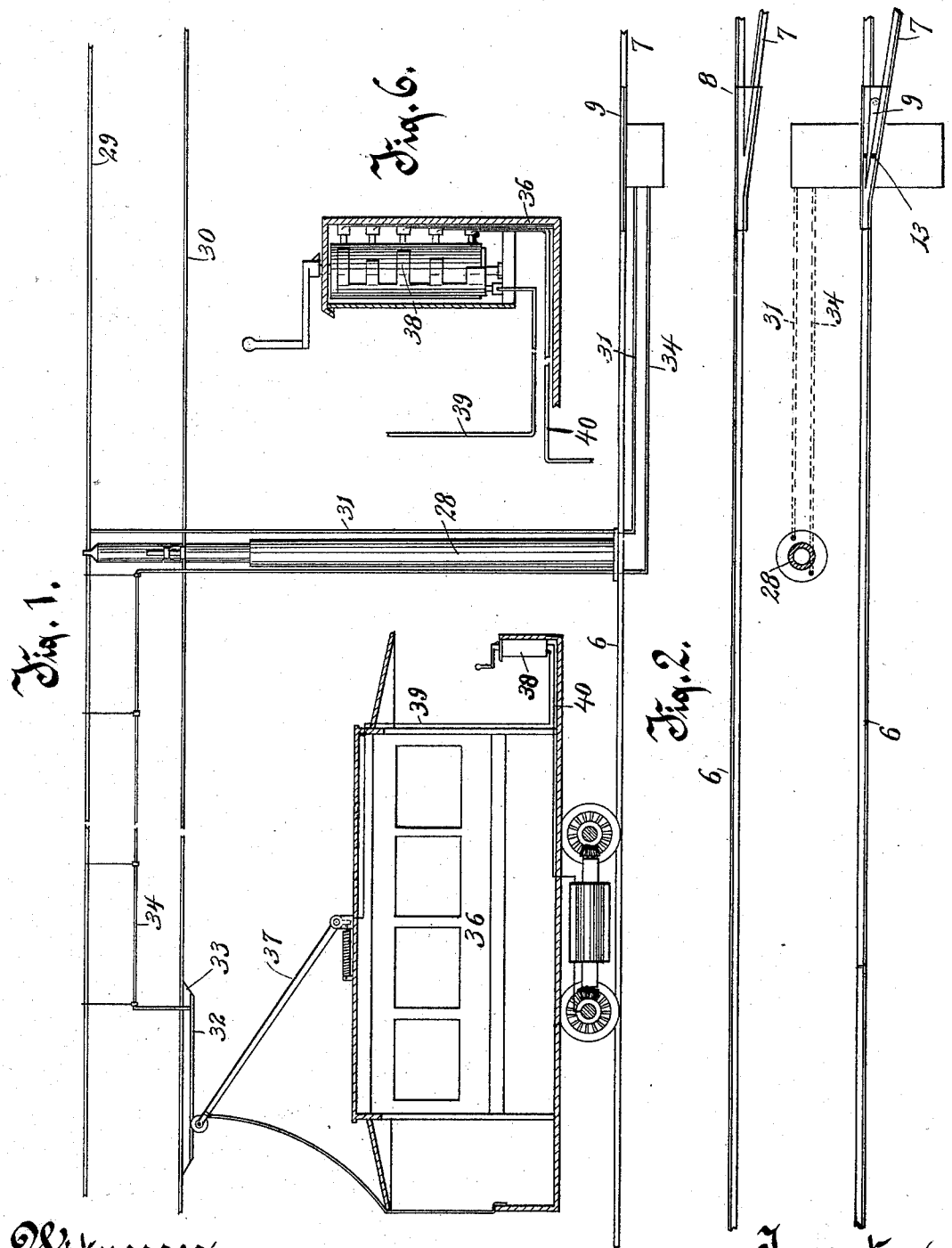
(No Model.) 2 Sheets—Sheet 1.

A. F. SCHINNER.

TRACK SWITCH FOR ELECTRIC RAILWAYS.

No. 527,294. Patented Oct. 9, 1894.



Witnesses.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

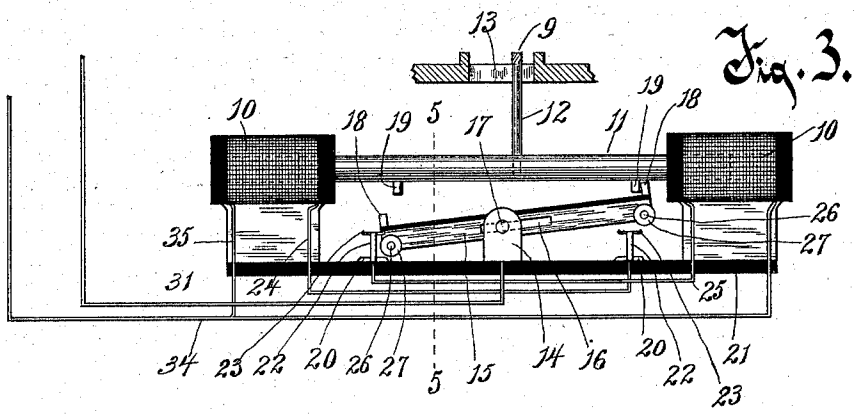


Fig. 4.

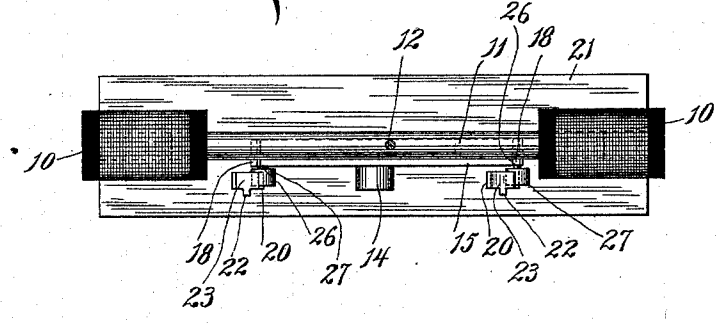
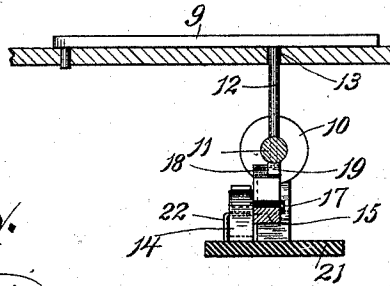


Fig. 5.



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UNITED STATES PATENT OFFICE.

AUGUSTIN F. SCHINNER, OF MILWAUKEE, WISCONSIN.

TRACK-SWITCH FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 527,294, dated October 9, 1894.

Application filed June 16, 1894. Serial No. 514,767. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTIN F. SCHINNER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a new and useful Improvement in Railway-Switches, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in railway switches.

The invention relates particularly to that class of switches which are automatically operated by electro-magnets, the electric current for which is supplied from the same source as that from which the car motor derives its power.

The object of the invention is to provide, in combination with switch operating mechanism which is actuated by the core of the magnets, a single insulated strip in the wire, completing the circuit of the magnets, and which shall serve, when contact is made therewith by the trolley of one car, to throw the switch point in one direction, and, when contact is made therewith by the trolley of the succeeding car, to throw the switch point in the opposite direction.

With the above primary object in view, the invention consists of the devices and their parts, or equivalents, as hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1, is a longitudinal sectional view of an ordinary form of electric car, showing the electric conductors employed in connection with my invention. Fig. 2, is a plan view of the railway track, showing the switch point, and in dotted lines the conductors which lead to and from the electro-magnets. Fig. 3, is an elevation of the switch operating magnets and the devices therewith for securing a closure of the electric circuits. Fig. 4, is a plan view of Fig. 3. Fig. 5, is a sectional view on the line 5—5 of Fig. 3, and Fig. 6, is a detail sectional view of the car-switch.

Like numerals of reference denote like parts throughout the several views.

Referring to the drawings, the numerals 6, 6, indicate the main rails; 7, 7, the branch tracks diverging therefrom; 8, a frog, and 9 a pivoted and swinging switch point.

On the side where the switch point is located are disposed two electro-magnets 10, 10, consisting of coils of wire which surround a movable core 11 of magnetizable material. This core is provided with an upward-extending arm 12, the upper end of which passes through a transversely elongated slot 13, and is connected to the switch point.

The numeral 14 indicates a metal post, and 15 a tilting and sliding metal bar, said bar provided medially with an elongated longitudinal slot 16, by which it is pivoted and supported on the post 14 by means of a pin 17 fixed in the post, and projecting into the slot of the bar. The bar 15 is provided with upward-projecting fingers 18, 18, one near each end, adapted severally to engage fingers 19, 19 fixed in the core 11.

Beneath the extremities of the bar 15 are metal plates 20, 20. These plates, as well as the supports for the magnets are insulated by means of the insulating strip 21. Metal posts 22, 22 extend upward from the insulating strip 21, and are formed or provided at their ends with metallic spring plates 23, 23, parallel with, and immediately above, the plates 20, 20. The metal plates 20, 20 are inversely connected electrically with the magnets 10, 10 by the insulated conductors 24 and 25, respectively.

Pins 26, 26 project out laterally from one face of the bar 15, and on these pins are journaled small rollers 27, 27, which rollers are adapted to pass alternately between sets of the plates 20 and 23, said plates having their opposite ends preferably inclined or beveled, to form flaring mouths for the ready passage of the rollers 27 therebetween, as well as for the exit of the rollers.

The numeral 28 indicates a wire supporting post, having the usual feed wire 29 connected to its upper end, and a trolley wire 30 at a point below the upper end. From the feed wire a conductor 31 leads to the metal post 14. Beneath the trolley wire is a short wire 32, which wire is connected to said trolley wire by means of an insulating strip 33. Extending from the short wire 32 is a conductor 34 which leads to one of the magnets 10, and is provided with a branch 35 leading to the other magnet.

The numeral 36 indicates an ordinary form of electric car, provided with the usual trolley 37, and ordinary switch mechanism 38, said switch mechanism being shown in detail, Fig. 6. The numeral 39 indicates the wire extending from the trolley to the car switch, and 40 the wire leading from the switch and extending to the motor, and from the motor to the car axle.

In the operation of my invention, when the trolley of the car is in engagement with the short wire 32, as shown in Fig. 1, the circuit is completed from the main wire 29 through the conductor 31, metal post 14, bar 15, plate 20 at the left, wire 25, magnet 10 at the right, return wire 34, short wire 32, and thence through the car to the motor, and finally to the tracks. This, of course, energizes the magnet 10 at the right of Fig. 1, and causes the core to be drawn into said magnet. The finger 18 (at the right) being in contact with the adjacent pin 19, the bar 15 is drawn thereby toward the right. It will be apparent that as the roller 27 at the left hand end of bar 15 is held between the plates 20 and 23, said end of the bar 15 is prevented from intermittingly breaking contact with the plate 20. As the bar 15 is drawn to the right in the manner just explained, the pin 18 thereof is, by electric energy, held in contact with the adjacent pin 19 until the core and switch point have reached the limit of their movements to the right, and by the same energy held in that position until the electric circuit is broken, which occurs when the trolley leaves the short wire 32. When the bar 15 has thus reached the limit of its movement toward the right, the roller 27 at the left passes from between the plates 20 and 23, and thereupon, by gravity, the longer arm of the bar 15 (at the right) falls down so as to bring the roller 27 at the right in position to pass between the plates 20 and 23 at the right, when the bar 15 is drawn toward the left in its next movement. When the longer right hand end of bar 15 has fallen in the manner explained, and the roller contacts with the plate 20, ready for passage between said plate and the upper plate 23, in this position the electric circuit at this point is completed from the main wire 29, through conductor 31, post 14, bar 15, plate 20 at the right, wire 24, magnet 10 at the left, branch wire 35 and return wire 34, so that when the circuit is again closed by reason of the contact of the trolley with the short wire 32, the movement of the core of the switch point will, by electric energy, be reversed. The moment such contact of the trolley is made, of course, the core is drawn toward the left, and exactly the same operation takes place at that end, as that just described in regard to the right hand end.

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

1. The combination, of a swinging switch point, a plurality of electro-magnets, a core reciprocative in the magnets, which core is connected to the switch point in such manner that the movement of the core correspondingly moves the switch point, a conductor leading from a main source of supply, a trolley wire, an insulated strip therein, a conductor leading from said insulated strip to the respective magnets, and a shifting bar electrically connected with the conductor leading from the main supply, said bar arranged to be shifted by the movement of the core, and in its alternate positions to close and complete electric circuits through the magnets for actuating the core, substantially as set forth.

2. The combination of a swinging switch point, a plurality of electro-magnets, a core reciprocative in the magnets, which core is connected mechanically to the switch point in such manner that the movement of the core correspondingly moves the switch point, a shifting bar arranged to be shifted by the movement of the core, plates in electric connection severally with one of the magnets, which plates are arranged to be contacted severally by the shifting bar, a conductor leading from a main source of electric supply and connecting electrically with the shifting bar, a trolley wire, an insulated strip therein, and a conductor leading from said insulated strip to the respective magnets, substantially as set forth.

3. The combination, of a swinging switch point, a plurality of electro-magnets, a core reciprocative in the magnets, said core having projecting fingers, and being connected to and by its movement to actuate the switch point, a conductor leading from a main source of supply, a trolley wire, an insulated strip therein, a conductor leading from the insulated strip to the respective magnets, and a sliding and tilting bar electrically connected with the conductor leading from the main supply, said bar provided with fingers adapted to engage the core pins, and in its alternate positions to close and complete electric circuits through the magnets for actuating the core, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUSTIN F. SCHINNER.

Witnesses:

ARTHUR L. MORSELL,

ANNA V. FAUST.