

(No Model.)

2 Sheets—Sheet 1.

A. J. BEITZEL.
ELECTRIC RAILWAY SYSTEM.

No. 555,800.

Patented Mar. 3, 1896.

Fig. 1.

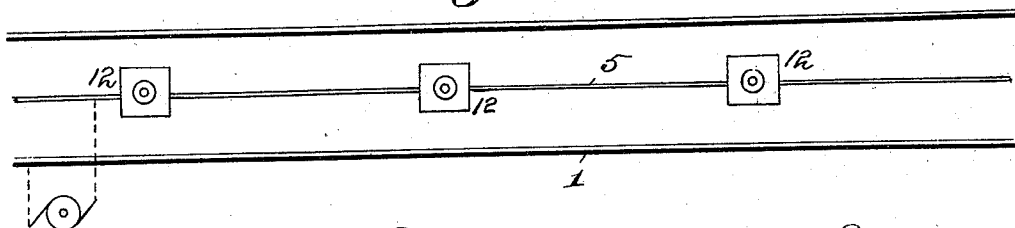


Fig. 2.

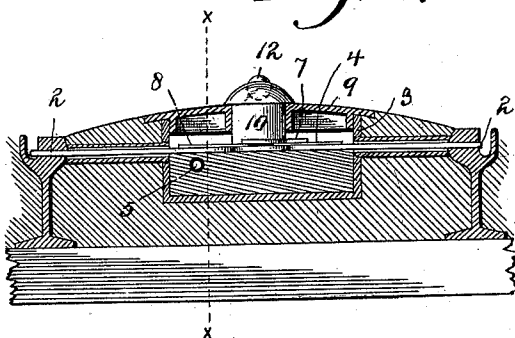


Fig. 3.

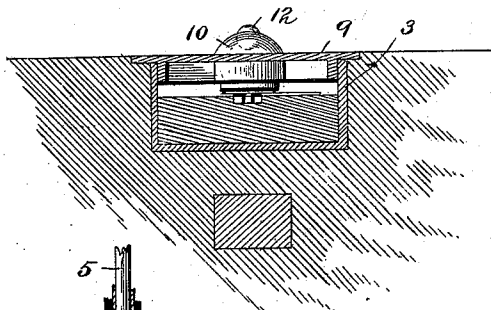
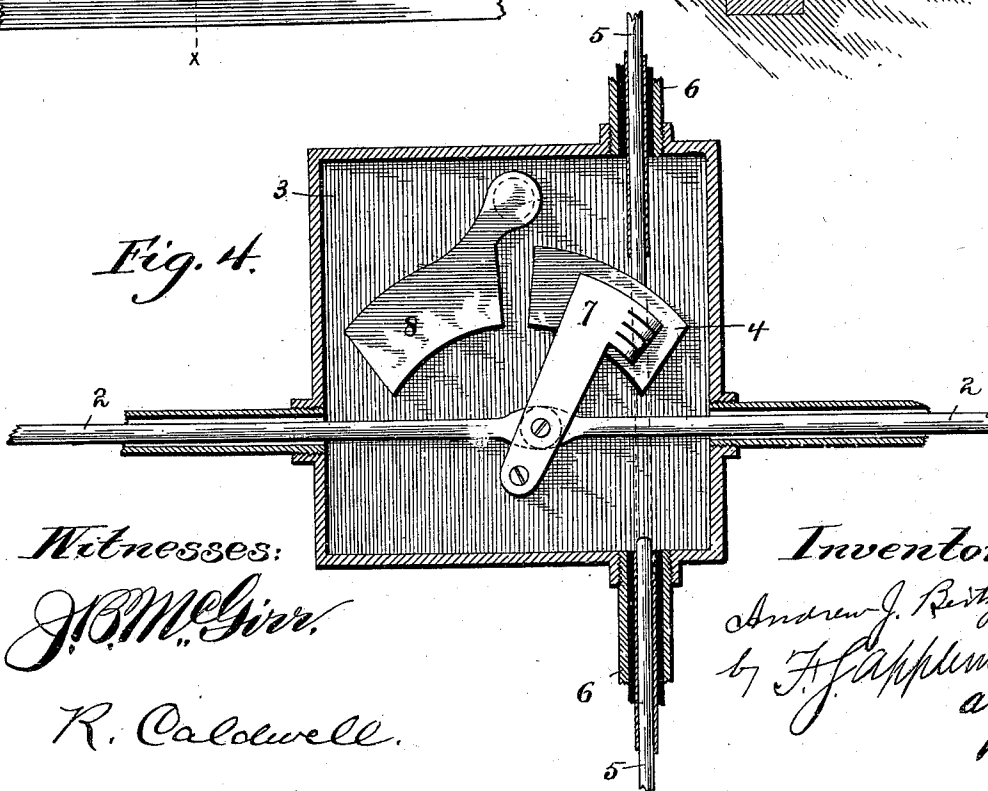


Fig. 4.



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2 Sheets—Sheet 2.

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Fig. 5.

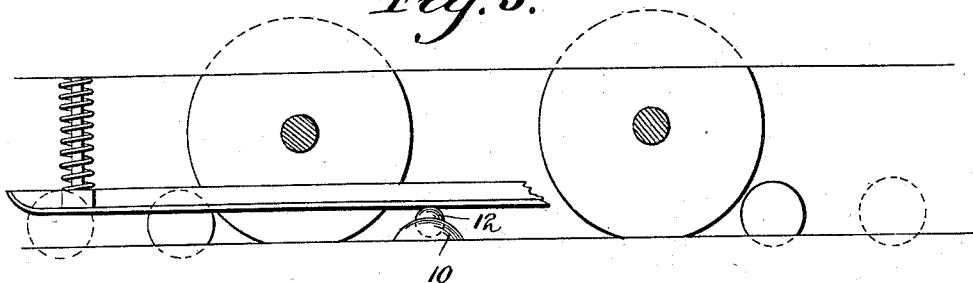


Fig. 6.

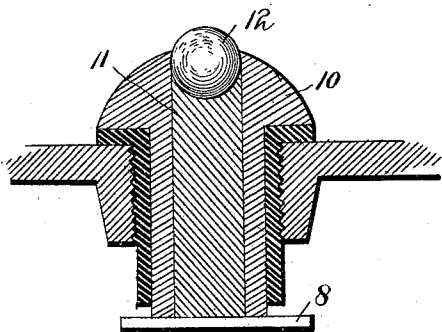
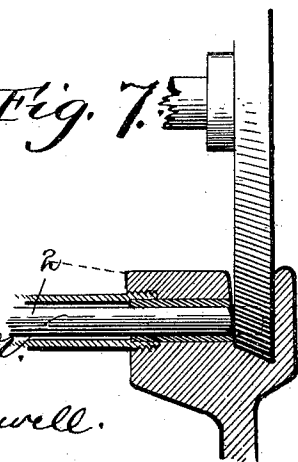


Fig. 7.



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UNITED STATES PATENT OFFICE.

ANDREW J. BEITZEL, OF BOILING SPRINGS, PENNSYLVANIA.

ELECTRIC-RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 555,800, dated March 3, 1896.

Application filed April 15, 1895. Serial No. 545,750. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. BEITZEL, a citizen of the United States of America, residing at Boiling Springs, in the county of Cumberland and State of Pennsylvania, have invented certain new and useful Improvements in Electric-Railway Systems, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The object of this invention is the production of an electric-railway system in which the circuit maker and breaker is automatically operated to make the circuit while the car is passing over a predetermined point and
15 has passed.

Furthermore, the invention resides in novel means for collecting the current without the use of a conduit with the current-gatherer
20 running in a slot thereof and in means for preventing water or moisture from penetrating the switch-box or affecting the lead-wire.

With these and other objects in view the invention consists in the novel details of construction, arrangement and combination of
25 parts to be hereinafter fully set forth and claimed.

In describing the invention in detail reference is had to the accompanying drawings,
30 forming part of this specification, wherein like numerals denote corresponding parts in the several views, in which—

Figure 1 is a plan view of a track, showing the rails and in dotted lines the lead-wire
35 and transverse rods. Fig. 2 is a transverse section of a conduit. Fig. 3 is a vertical sectional view taken on the line *xx* of Fig. 2. Fig. 4 is a top plan view of the switch-box and connections. Fig. 5 is a side view of the
40 current-gatherer in contact with the charged pole. Fig. 6 is a vertical sectional view of the pole. Fig. 7 is a detail view showing the operation of the rod.

In the drawings, 1 denotes the rails of a
45 track provided equidistantly with operating-rods 2, the ends of which pass through apertures in the inner side of the rail, with the ends protruding into the groove thereof.

The switch consists of a base 3, having arranged thereon a plate 4, which is constantly
50 charged by the lead 5, arranged in and insulated from a conducting-pipe 6, extending

along the road-bed. This pipe is formed in sections and is screw-threaded into the switch-block to form a water and moisture proof
55 connection. The switch-arm 7 is pivoted to the switch-block and to the operating-rod 2. The rod is arranged to protrude into the groove of the rails on one side or the other, as shown in Fig. 2. The rod carries the
60 switch-arm and closing a circuit to the opposite plate 8 and to the car through suitable conductors, to be hereinafter referred to. The car is provided with means for throwing the rod, which may consist either of wheels
65 mounted on an adjustable arm to be lowered to ride in the groove of the rail or of horizontal or upright bars, it being understood that the ones in engagement with the rail must be on opposite ends and sides of the car. Thus
70 the front wheel on the right side will throw the rod and make the connection, and the rear wheel on the opposite side will come into contact with the end of the rod which has been driven to protrude into the groove of
75 the opposite rail. In running the car back or forth the throw-wheels all ride permanently in the grooves on both sides of the track. However, when the car is turned end
80 for end by means of a turn-table, loop or Y then the throw-wheels on that side of the car where they are the shortest distance apart are spread by means of an adjustable arm so that their axes will fall outside of the axes of the throw-wheels on the opposite side of the
85 car.

In either the backward or forward movement of the car the fore wheel (becoming such by the change of movement) of the two, being the shorter distance apart, engages the
90 throw-rod and turns the current on, while the rear wheel on the opposite side of the car (becoming such by change of direction in moving) engages the throw-rod on that side and disconnects the current.

The surface-plate 9 is provided with an aperture arranged over the switch-boxes to receive an ordinary copper bolt 10, which is centrally apertured to receive a core 11, having a semicircular recess at its top to form a
100 seat for a ball 12, over which the current-gatherer of the car passes.

The bolt 10 is provided with packing, of rubber or other suitable material, to prevent

water from entering the switch-block. This bolt 10 has its end resting on the plate 8, and when the plate is charged the current passes through the bolt, from whence the same is
5 conducted by the current-gatherer to the motor in the car.

It will be apparent that this system may be employed for charging the car by direct or alternating current or by induction.

10 Having fully described my invention, what I claim as new, and desire to obtain by Letters Patent, is—

1. In an electric system, a series of switches electrically connected, contact-points extend-
15 ing from the plate of the switch to the surface of the road-bed, a contact-lever connected with a transversely-extending rod with its ends alternately protruding into the grooves of the rails on opposite sides of the
20 track and means at the front and the rear of the car for operating the rods for the purpose described.

2. In an electric system, a series of switches electrically connected, contact-points extend-
25 ing from the plate of the switch to the surface of the road-bed, a contact-lever connected with a transversely-extending rod with its ends alternately protruding into the grooves of the rails on opposite sides of the
30 track, throws on the front of the car for mov-

ing the rods to make electrical connection when the car passes over a contact-point and means on the rear for operating the rod to close the circuit, as and for the purpose described.

3. In an electric-railway system, a series of switches suitably connected, contact-points extending therefrom, levers for making and breaking current, and a rod connected with
35 the lever and protruding into the grooves of the rails and operated by suitable throws on the car, as and for the purpose described.

4. In an electric-railway system, a series of switches, an insulated lead-wire connecting the switches, suitable pipe incasing the lead-
45 wire, said pipe connecting with the switches by moisture-proof points, contact-points extending to the surface of the road-bed from a contact-plate of the switch, a contact-lever having pivoted thereto transversely-extend-
50 ing rods which protrude into the grooves of the rails through insulated apertures, and means on the car for operating the rods, as and for the purpose described.

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

ANDREW J. BEITZEL.

Witnesses:

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