

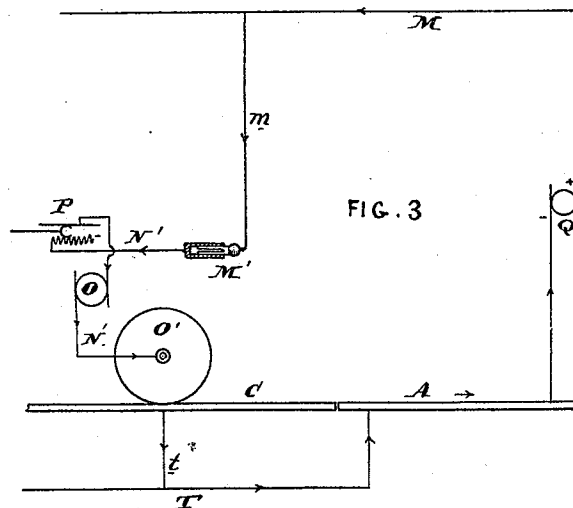
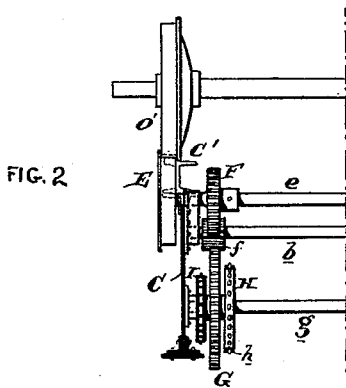
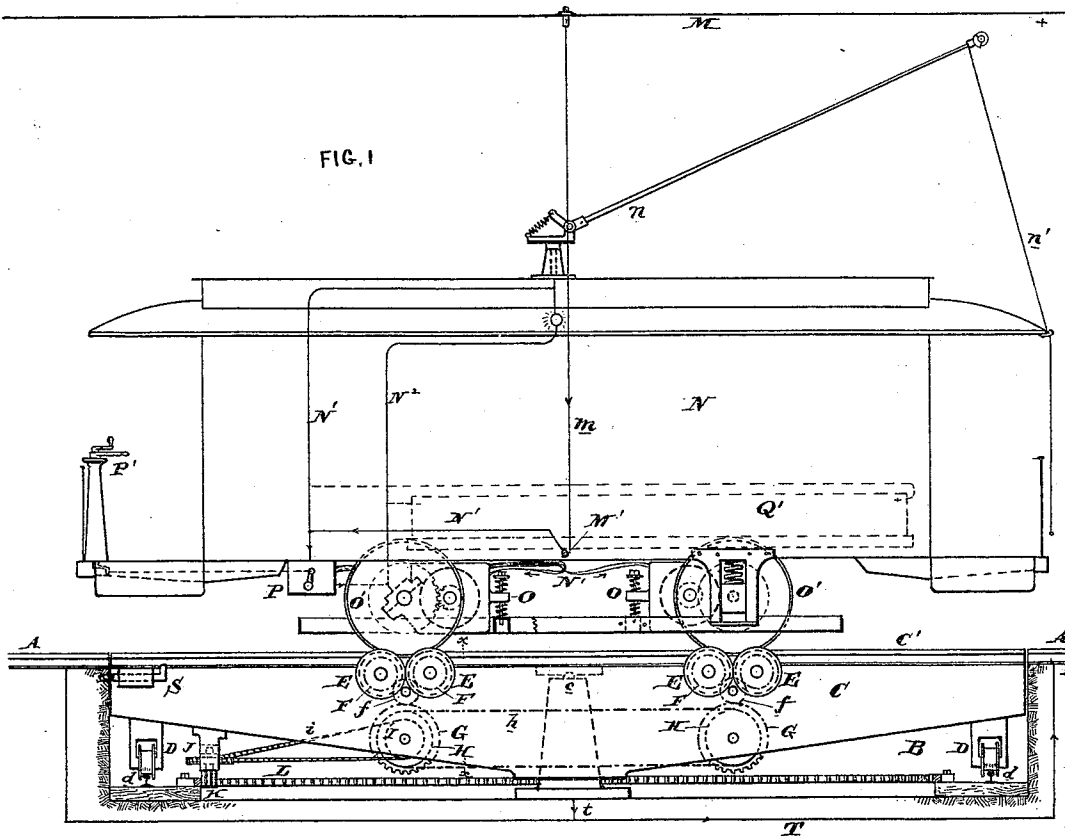
(No Model.)

2 Sheets—Sheet 1.

R. M. HUNTER.
ELECTRIC RAILWAY TURN TABLE.

No. 520,527.

Patented May 29, 1894.



Attest

H. L. Mather
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Inventor

R. M. Hunter

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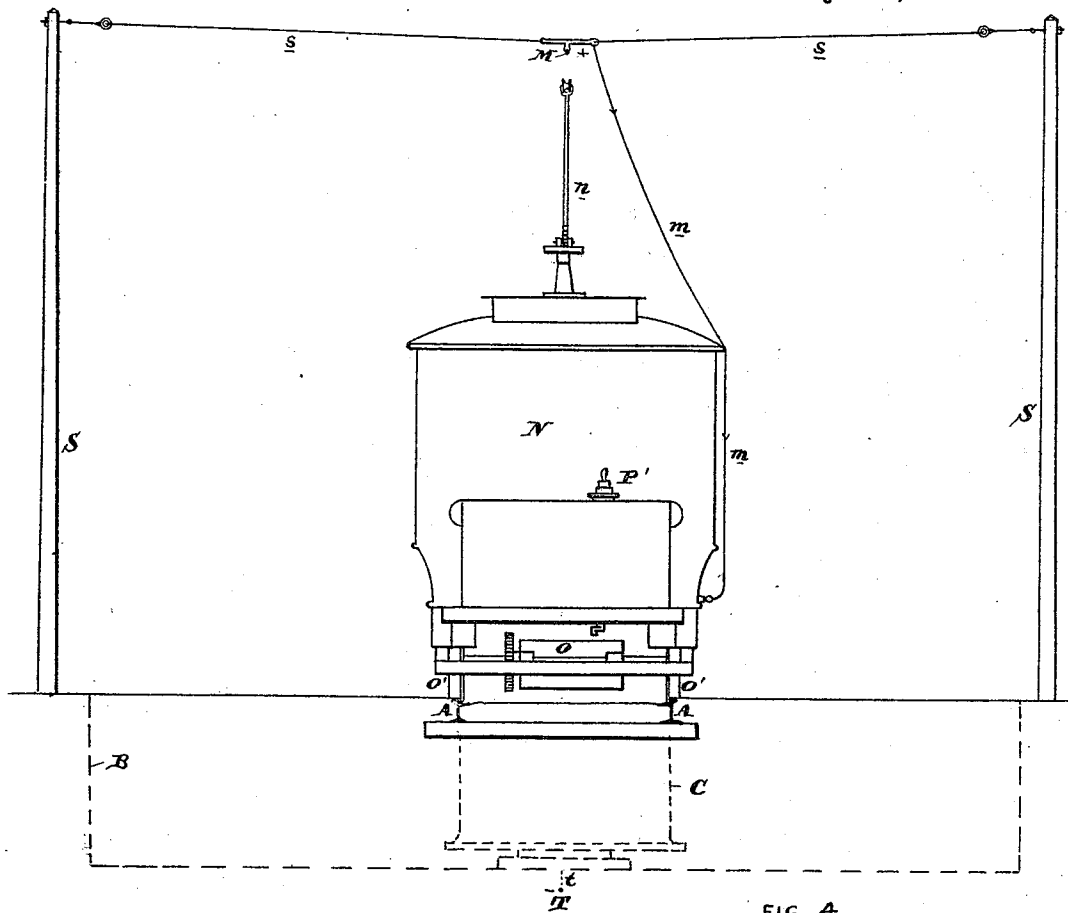


FIG. 4

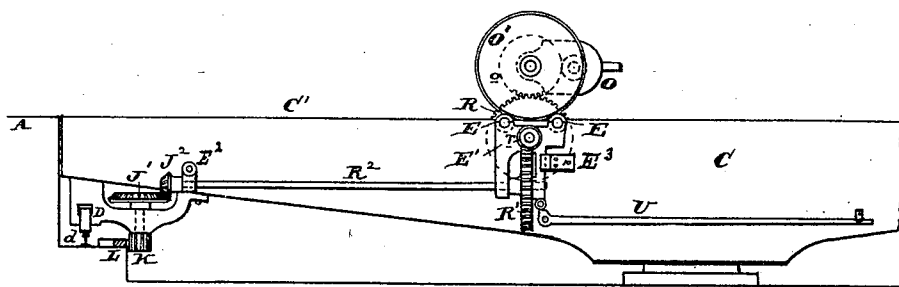


FIG. 5

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UNITED STATES PATENT OFFICE.

RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRIC-RAILWAY TURN-TABLE.

SPECIFICATION forming part of Letters Patent No. 520,527, dated May 29, 1894.

Application filed February 2, 1893. Serial No. 460,708. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Electric Railways, of which the following is a specification.

My invention has reference to electric railways, and consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings which form a part thereof.

This application, Case No. 242, has particular reference to means for reversing or shifting cars upon an electric railway, and more especially embodies a turn-table structure adapted to be mechanically operated by the motive power of the railway car which it supports.

In carrying out my invention I employ in connection with a railway, a turn table and certain structures or devices fully specified hereinafter and more particularly pointed out in the claims, whereby the motive power of the car may be employed to operate the turn table in switching or reversing the cars.

The invention is adapted to electric railways employing line conductors leading from a stationary source of electric energy, and also to that system of electric propulsion in which the electric energy is carried upon the car itself in the form of secondary or other batteries.

Referring to the drawings: Figure 1 is a side elevation of a turn table and car embodying my invention. Fig. 2 is a sectional elevation on line *x-x* of a portion of the turn table showing part of the power transmitting devices. Fig. 3 is a diagram illustrating the various electric circuits of the structures shown in Fig. 1. Fig. 4 is an end elevation of my invention showing the means of supplying current from a suspended conductor to the car while being turned; and Fig. 5 is a side elevation of a turn-table showing a different manner of supplying the power from the motor of the car to the turn-table and which also embodies my invention.

A is the main track.

B is the turn-table well.

C is the pivoted turn-table or movable switch structure preferably formed with a central pivot *c*. The turn-table may be made

or any of the well known constructions, and its ends may be provided with guide rollers *D* running upon a curved rail *d* arranged in the well. The turn-table is provided with rails *C'* adapted to be brought in line with the rails *A* of the main track. There may be any number of rails around the well as is customary in many railways for switching the cars onto different tracks, or the turn-table may be employed wholly for turning the car end for end. The turn-table is provided with rollers or wheels *E* arranged in pairs adapted to come under two or more of the car wheels *O'* of the electric car *N* so that when the car is run upon the turn-table the wheels thereof may in whole or in part rest upon said supporting wheels *E*. These wheels *E* are secured to transverse shafts *e* which have secured to them gear wheels *F*. These gear wheels of each pair of shafts *e* are connected by an intermediate pinion *f*, which pinion in turn meshes with the large gear *G* upon a transverse shaft *g*. The pinion *f* may be secured to a transverse shaft *b* carried in the turn-table structure. The shaft *g* is provided with a sprocket wheel *I* about which a sprocket chain *i* passes and leads to a sprocket wheel *J* adapted to drive a pinion *K* which meshes with a stationary rack *L* arranged in the well *B* of the turn-table. It will thus be observed that if the wheels *O'* are caused to revolve by the operation of the electric motor *O* on the car, pinion *K* will be caused to revolve and thus cause the turn-table *C* which carries it to be turned about its pivot *c*. When the turn-table is in its proper position the bolt *S* may be shot so as to securely hold the rails *C'* in line with the rails *A*. When this is done the operation of the electric car will cause the car to pass off the turn-table on to the main track since the turn-table cannot move to respond to the action of the motor.

In Fig. 1 I have shown both sets of car wheels arranged to operate power devices similar to those described and these are connected together by means of sprocket wheels *H* and a sprocket chain *h*. By this means both motors may be utilized in operating the turn-table. It is evident, if desired, in those cases where the regulator is not adapted to cut out one of the motors but must operate both motors, one set of the supporting wheels *E* may

be idlers, though it is preferable to utilize both motors to move the turn-table.

The car N may have its motors O connected to rotate the axle in any suitable manner, the common method being by gearing.

A regulator P is carried by the car and may be operated by a hand lever mechanism P'. The regulator may be of any suitable construction. The electric circuit N' delivers current to the regulator P, and from the regulator the circuits pass out to the motors and then return again, and ultimately the current is delivered to the wheels and to the rails.

N² is the ordinary lighting circuit on the car.

n is a trolley or current collecting device pivoted to the roof of the car in any of the well known manners.

n' is a trolley cord adapted to hold the trolley from the suspended conductor M when turning the car upon the turn-table. The suspended conductor M is the positive conductor and the rails and earth are the return. To insure good metallic connection in the return circuit I connect the divided rails A by a circuit T, which circuit is also connected with the pivot of the turn-table by a branch circuit t. By this means the car in all of its positions is in good electrical connection with the rails.

The suspended conductor M may be suspended in any suitable manner, usually by posts S and span wires s.

m is a flexible conductor connecting with the suspended conductor in such a manner as to permit the trolley to readily pass along its under side, and this flexible conductor is adapted to be connected at its lower end with the motor circuit N' upon the car by a suitable coupling connection M' best shown in Figs. 1, 3 and 4. This flexible conductor m is used temporarily while the car is being turned at a time and when the trolley could not be well employed. After the car is brought into the position desired, the flexible conductor m is disconnected, the trolley is adjusted to the suspended conductor and the car caused to move from off the turn table.

Q represents any source of electrical energy at any place upon the railway and is adapted to supply positive current to the suspended conductor, and negative current to the rails or return.

The invention is not confined to cases where the source of electrical energy is delivered to the car by means of conductors arranged along the railway, but is also applicable to the case where cars are provided with their own source of power such as in the case of storage battery cars or as they are sometimes called accumulator tram cars.

Q' represents storage or other batteries carried upon the car in any of the well known manners, and connect with the regulator P upon the car so that the said regulator controls the current delivered from the batteries

to the motors. Broadly considered, therefore, any source of electric energy may be employed in connection with my improvement.

In place of the power transmitting devices shown in Figs. 1 and 2 whereby the rotation of the car axle and wheels may move the turn-table, I may employ various other constructions, one of which is shown in Fig. 5. In this case we have the general structure of the turn-table substantially the same. The wheels O' of the car are received and supported upon two idler wheels E carried in a frame E'. The frame E' also carries a large spur wheel R connected with a worm r. A shaft R² has one end geared to the pinion K (which directly turns the turn-table) by means of bevel gears J' J² and has its other end secured to a large worm wheel R' journaled in the frame E' and meshing with the worm r. A lever U pivoted to the turn-table C is adapted to raise or lower the frame E' and its several wheels. The frame E' swings about the pivot E² arranged at the distant end of the shaft R² and is guided by a guide E³ upon the turn-table frame C. The lever U has a cam face which presses against a small roller upon the frame E' and thereby raises it when necessary, or permits it to be lowered. When lowered, the rollers E descend and permit the car to travel upon the rails C'. When the frame E' is raised the wheels O' of the car are bodily raised clear of the rails and the gear R is made to mesh with the gear o upon the axle which is directly driven by the usual pinion upon or in connection with the motor armature.

I do not confine myself to the minor details of construction as they may be modified in various ways without departing from the principles of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a turn-table or movable switching structure, power devices to move the turn-table or switching structure about its pivot connection, an electric car adapted to be supported and moved by the turn-table or switching structure and provided with an electric motor to propel it, power transmitting connections between the electric motor and power devices to move the turn-table or switching structure whereby the electric motor may be employed to operate the turn-table or switching structure, supporting wheels carried by the turn-table or switching structure upon which the wheels of the car rest during the operation of the said turn-table or switching structure, and means to raise and lower the said wheels for the purpose of supporting the car wheels independently of the rails.

2. In an electric railway, the combination of a turn-table or movable switching structure, power devices to move the said turn-table or switching structure about its pivot connection, an electrically propelled car provided with an electric motor mechanically connected

to rotate the axle, connecting devices between the car axle and wheels and the power devices upon the turn-table or switching structure whereby the operation of the motor of the car may be employed to move the turn-table or switching structure with the car, a stationary source of electric supply, conductors extending along the railway to the turn-table or switching structure, and a flexible conductor connecting with one of the conductors leading to the turn-table or switching structure from the source of supply and adapted to make connection with the electric circuits on the car for the purpose of delivering current to the motor while the car is being moved by the turn-table or switching structure.

3. In an electric railway, the combination of a turn-table or movable switching structure, power devices to move the said turn-table or switching structure about its pivot connection, an electrically propelled car provided with an electric motor mechanically connected to rotate the axle, connecting devices between the car axle and wheels and the power devices upon the turn-table or switching structure whereby the operation of the motor of the car may be employed to move the turn-table or switching structure with the car, a stationary source of electric supply, conductors extending along the railways to the turn-table or switching structure, a flexible conductor connecting with one of the conductors leading to the turn-table or switching structure from the source of supply and adapted to

make connection with the electric circuits on the car for the purpose of delivering current to the motor while the car is being moved by the turn-table, and a disconnectible coupling for making a temporary connection between said flexible conductor and car.

4. In an electric railway, the combination of the main track, a turn-table arranged in said track, power devices to turn or move the said turn-table or movable structure upon its pivot, a supply conductor for delivering current to cars while traveling over the railway, stationary source of electric energy for supplying current to the supply conductors, an electrically propelled car having an electric motor to rotate its axle, current collecting device carried with the car and making a traveling connection with the supply conductor, regulator on the car adapted to control the operation of the motor, power transmitting devices carried by the turn-table or switching structure for temporarily connecting the electric motor with the power devices of the said turn-table or switching structure whereby the latter may be operated by the electric motor on the car, and a temporary flexible electric circuit between the supply conductor and the motor on the car.

In testimony of which invention I have hereunto set my hand.

R. M. HUNTER.

Witnesses:

H. L. MOTHERWELL,
ERNEST HOWARD HUNTER.