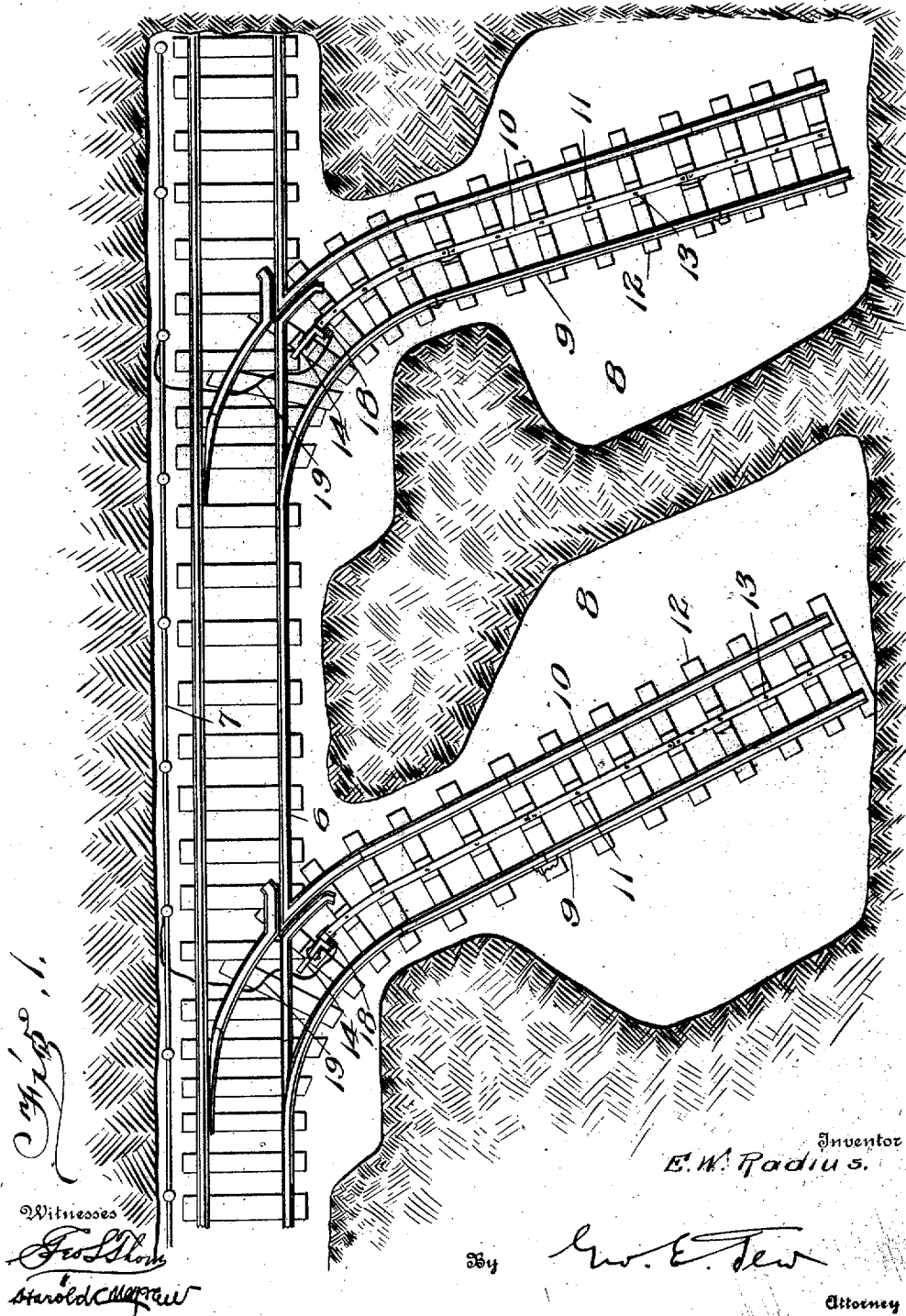


954,342.

E. W. RADIUS.  
ELECTRIC RAILWAY SYSTEM.  
APPLICATION FILED FEB. 11, 1909.

Patented Apr. 5, 1910.

2 SHEETS—SHEET 1.





# UNITED STATES PATENT OFFICE.

EDWARD W. RADIUS, OF SHELburn, INDIANA.

ELECTRIC-RAILWAY SYSTEM.

954,342.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed February 11, 1909. Serial No. 477,282.

*To all whom it may concern:*

Be it known that I, EDWARD W. RADIUS, citizen of the United States, residing at Shelburn, in the county of Sullivan and State of Indiana, have invented certain new and useful Improvements in Electric-Railway Systems, of which the following is a specification.

This invention relates to electric railway systems, and comprises especially an apparatus adapted for use in coal mines, and it involves the use in a mine of an electric railway having a main line in the entry or drift and branches which enter the working rooms, the branches being provided with automatic means for closing and opening the supply circuit thereto, said means being actuated by the car as it enters or leaves the room. The advantage of this is that there is no current in the room except when the motor is in the room. This avoids accidents to the miners which would be liable to happen in case of a continuously charged track. The construction disclosed also avoids the use of a trolley wire in the rooms, the current being supplied by means of a third rail or conducting strip which is laid on the ties and which can be easily attached as fast as the breast is advanced. At the end of this conductor rail is a switch which is operated by the motor as it passes thereover and which closes the circuit of the branch as the motor enters the same and opens the circuit as the motor leaves the branch, thus making the whole branch dead when the motor is not in the room.

The invention will enable the mining company to dispense with mules for hauling the coal, and provides means for the use of electric power without great danger of accident therefrom.

The invention is illustrated in the accompanying drawings in which—

Figure 1 is a plan of a mine provided with the railway; Fig. 2 is a side elevation of the switch and part of the motor car, in the act of throwing the switch; Fig. 3 is an end elevation of the switch and the contact shoe on the motor truck.

Referring specifically to the drawings, 6 indicates the main line located in the drift or entry leading from the hoisting shaft. This line may be provided with a trolley wire 7 or other suitable conductor located in substantially fixed or permanent position. The workings or rooms 8 leading off from the

drift are each provided with a branch line 9 the rails, or one rail at least, of which are bonded to the rails of the main line carrying one side of the circuit. The branch track is provided with a conductor or third rail 10, preferably located between the track rails and consisting conveniently of flat strap iron mounted upon insulating blocks 11 on the ties 12, and shown attached by counter-sunk lag screws 13.

At the end of the third rail adjacent the main line is an automatic switch or cut-out comprising a lever or rocker 14 pivoted at 15 to swing vertically and provided at one end with a knife 16 which when the switch is closed enters between the leaves 17 of a conducting block 18 to which the insulated wire 19 is electrically connected, said wire leading off from the main conductor 7. At the opposite end the lever 14 has a head 20 so that this one arm of the lever is of somewhat greater weight than the other arm.

The motor truck indicated at 21 has thereon depending guide bolts 22 on which is mounted a cross head 23. A spring 24 normally presses the cross head down to the extent permitted by the bolts 22, said spring being coiled around a bolt 25 on the truck and seated in a socket 26 on the top of the cross head. The under side of the cross head carries a shoe 27 held in insulation 28 and connected by a conductor 29 to the motor.

The switch and shoe are so arranged that the latter will wipe over the former as the motor car enters or leaves the branch, the switch being located, as stated, at the end of the conductor rail and electrically connected thereto. When the motor car enters the branch track it strikes one arm of the switch lever and throws the same down, thereby closing the switch and charging the third rail 10, which remains charged while the motor is in the branch. When the motor leaves the branch it wipes over the head part 20 of the switch lever and depresses the same, thereby lifting the other arm and opening the circuit. This makes the whole branch dead, and there is consequently an entire absence of danger to the workmen in the room except when the motor car is in the branch.

A feature of the invention is the ease with which the devices may be changed from one working room to another. The conductor rail and switch can be quickly taken up and

connections made at the other rooms. The practical difficulties of an overhead trolley wire in the branch lines, and the danger of a continuously charged third rail in the branch lines, are avoided.

5 An electric mining machine can if necessary be used at the end of the branch track and supplied with current by the means described, the switch being automatically  
10 opened and closed when the machine enters or leaves the working.

I claim:

15 The combination with a track and a third rail mounted on the ties between the track rails, and a car on the track having a depending shoe adapted to travel on the top of the third rail, of a switch member comprising a substantially horizontal rocker

pivoted at the middle and located in line with the third rail, said rocker having two 20 arms projecting in opposite directions from the pivot and at angles to each other, one arm having a contact piece offset laterally on one side, and the other being weighted, said arms swinging vertically above and in 25 line with the top of the third rail respectively, in position for the shoe to wipe over the rocker and depress the upwardly projecting arm.

In testimony whereof, I affix my signature 30 in presence of two witnesses.

EDWARD W. RADIUS.

Witnesses:

C. A. GILMOUR,  
JAS. STEWART.