(No Model.)

R. A. BALDWIN.

ELECTRIC RAILROAD SWITCH.

No. 534,028. Patented Feb. 12, 1895.

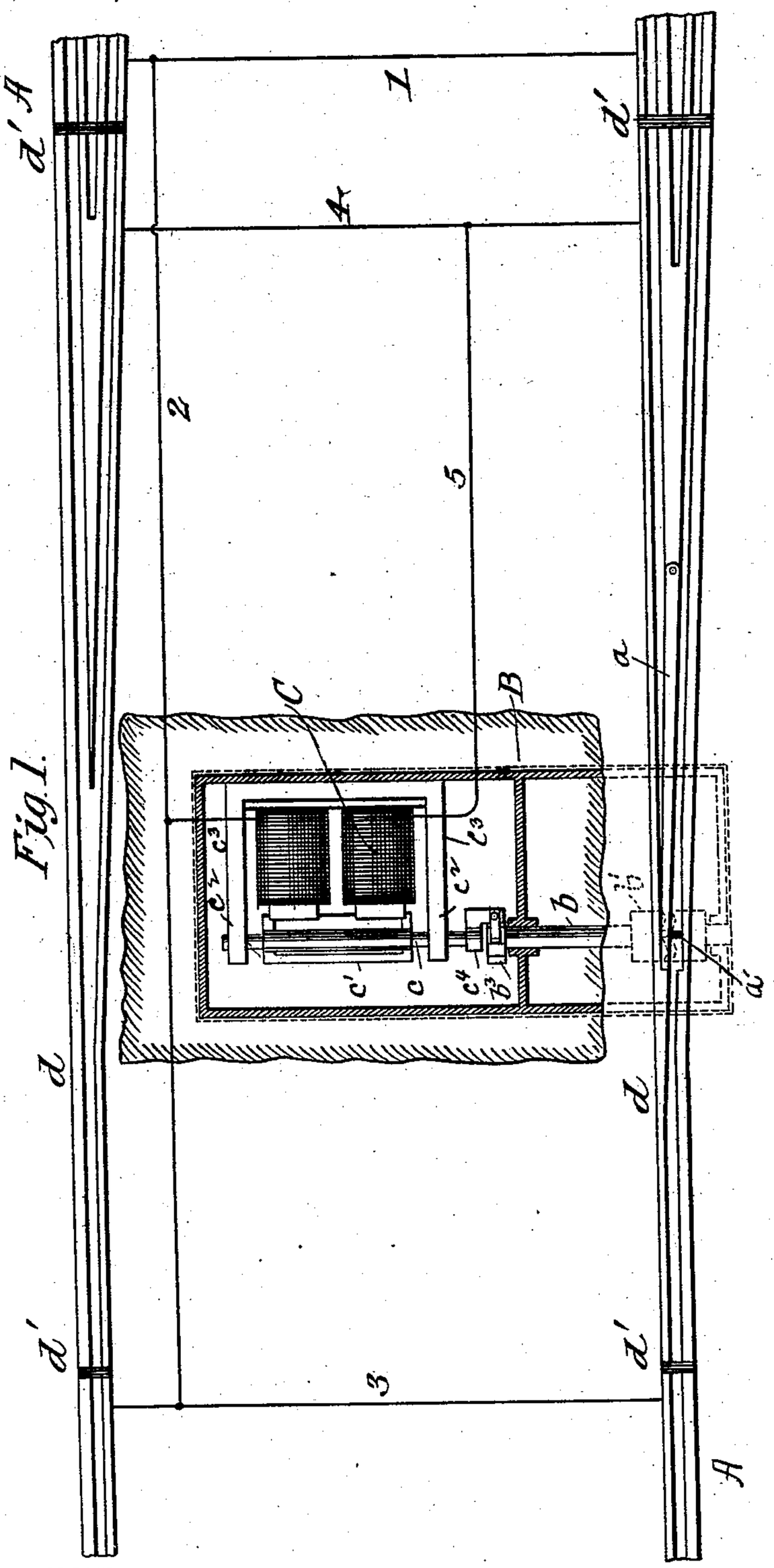

Fig. 1.

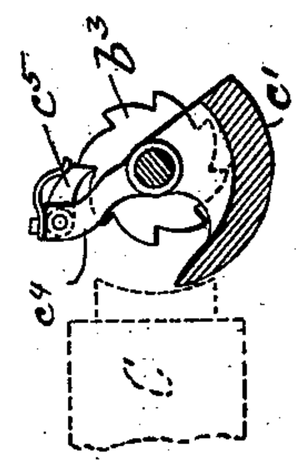

Fig. 3.

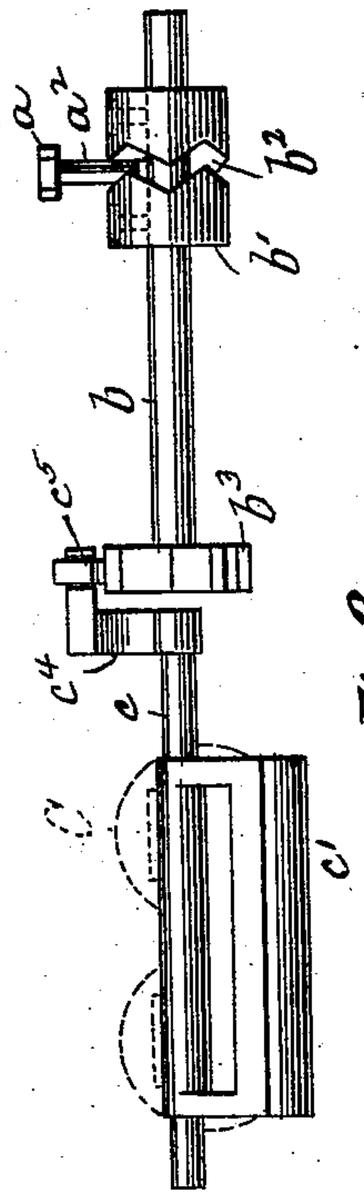

Fig. 2.

WITNESSES:
Frank S. Ober.
H. A. Offerman.

INVENTOR
Rollin A. Baldwin

BY
Wm. A. Rosenbaum
ATTORNEY

UNITED STATES PATENT OFFICE.

ROLLIN ALGER BALDWIN, OF SOUTH NORWALK, CONNECTICUT, ASSIGNOR TO THE FITCH EXCELSIOR SWITCH COMPANY, OF NEW JERSEY.

ELECTRIC RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 534,028, dated February 12, 1895.

Application filed June 27, 1893. Serial No. 478,948. (No model.)

To all whom it may concern:

Be it known that I, ROLLIN ALGER BALDWIN, a citizen of the United States, residing at South Norwalk, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Electric Railroad-Switches, of which the following is a full, clear, and exact description.

This invention relates to automatic apparatus for throwing the switch point of a railway, electrically, the object being to provide a simple and efficient mechanism for this purpose.

The invention is designed as an improvement upon that described in the application of C. M. Fitch, filed June 17, 1893, Serial No. 477,899. The said improvements consist in doing away with a portion of the apparatus described in said application and in providing a more compact and efficient device.

The invention consists of the details of construction which will be hereinafter described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan of a portion of a railway track and roadbed equipped with my improved apparatus. Fig. 2 is a side elevation in detail of the main operating shafts and their attachments; and Fig. 3 is a sectional view through the armature of the electro-magnet.

The electric current used to operate the switch is the return current from the electric motor propelling the car which ordinarily passes through the rails of the track.

A A represent the two rails of a track.

a is a switch point in the track and is of the usual construction for switching a car from one line to a branch therefrom. At the switch the track is provided with a transverse slot *a'* through which a downwardly projecting pin a^2 connected with the switch point passes. In the road-bed a double box B is buried adjacent to the switch point. In one compartment of this box a shaft *b* is mounted in suitable bearings, and is provided with an enlargement *b'* having an annular, zig-zag groove b^2 located directly beneath the switch point and into which the pin which is carried by the switch projects. When this shaft rotates the sides of the zig-zag groove impinge against the pin and throw the switch from one position to the other. In the other compartment of the box in the road-bed, is arranged an electro-magnet C and a shaft *c* which carries a rigidly adjusted armature *c'*. This armature is a segment of a cylinder and is gradually thickened toward the edge most remote from the poles of the magnet. The weight of the armature normally holds it vertical below the shaft and the electro-magnet is arranged in a horizontal position within attractive distance of one edge of the armature. The armature shaft is mounted in bearings c^2 which are supported in arms c^3 located in a plane parallel to the direction of pull of the electro-magnet. This makes a rigid structure and prevents bending of the armature shaft when in action. One end of the armature shaft projects beyond its bearing and carries a crank c^4 at the end of which is a pivoted pawl c^5. The shaft *b* before referred to projects through the partition between the two compartments of the box to a point closely adjacent to the end of the armature shaft, the two shafts being directly in line with each other. This inner end of the shaft *b* is provided with a ratchet wheel b^3. A pawl engages with this ratchet, and each time the armature is attracted it rotates the shaft *b* a distance equal to the length of one of the inclines of the zig-zag groove b^2 and thus throws the switch point from one position to the other. When the magnet is de-energized the armature falls back of its own weight in the position shown in Fig. 3 and carries the pawl to a new position on the ratchet wheel. At the next operation, the cam is rotated the same distance and the switch is moved in the opposite direction.

The electric circuits are as follows: The track through which the return current flows is provided with an insulated section *d*, the insulated points being represented at *d'*. This section is bridged by the conductors 1, 2, and 3 which normally carry the return current beyond the insulated section when no car is upon it. A wire 4 is connected with the insulated section, and a branch 5 from this leads through the electro-magnet C and thence to wire 2. In the operation of the switch, a car approaching from either direction runs upon the insulated section of rails and thereby delivers

its return current to conductors 4 and 5 which include the electro-magnet. The magnet becomes energized and attracts its armature and reverses the position of the switch. If it is not desired to change the switch, the current may be cut off from the car momentarily while it passes over the insulated section by its momentum.

Although I have described the switch as being operated by the current used to propel an electric car, it is obvious that the same mechanism may be controlled by a local circuit including a battery or other generator. The car would then be equipped with a metallic plate which the motorman could manipulate at his pleasure to close the circuit and operate the switch.

Having thus described my invention, I claim—

1. In an electric railway switch, the combination with the switch point, of a rotating cam acting directly thereupon, and an electro-magnet adapted to rotate said cam, substantially as described.

2. In an electric railway switch, the combination with a switch point, of a rotating shaft carrying a cam directly connected with the switch point, a separate shaft carrying an armature, an electro-magnet bearing upon said armature, and means for connecting the two shafts together, for the purpose set forth.

3. In an electric railway switch, the combination with the switch point, of two shafts mounted in line with each other, one provided with a cam acting directly upon the switch point and with a ratchet wheel, and the other provided with an armature and with a pawl engaging said ratchet wheel, and an electro-magnet acting upon said armature, for the purpose set forth.

4. In an electric railway, the combination of an insulated section of the track, a switch point included in said section, an electro-magnet, an armature connected to said switch point, and circuit wires connecting said insulated section of the track with the non insulated section or ground, said wires including said electro-magnet.

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

ROLLIN ALGER BALDWIN.

Witnesses:

GEORGE LOCKWOOD,

HERMAN SNYDER.