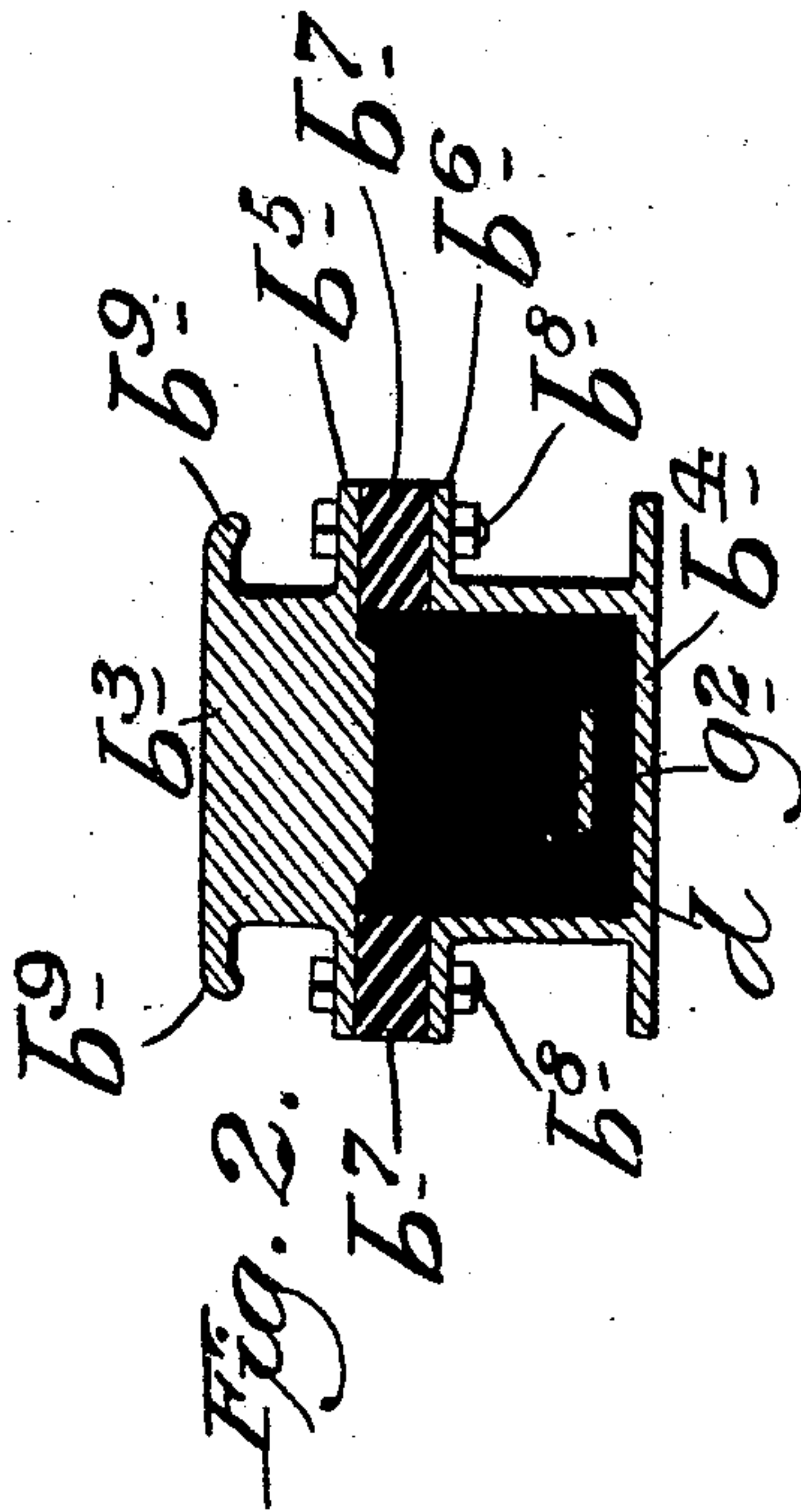
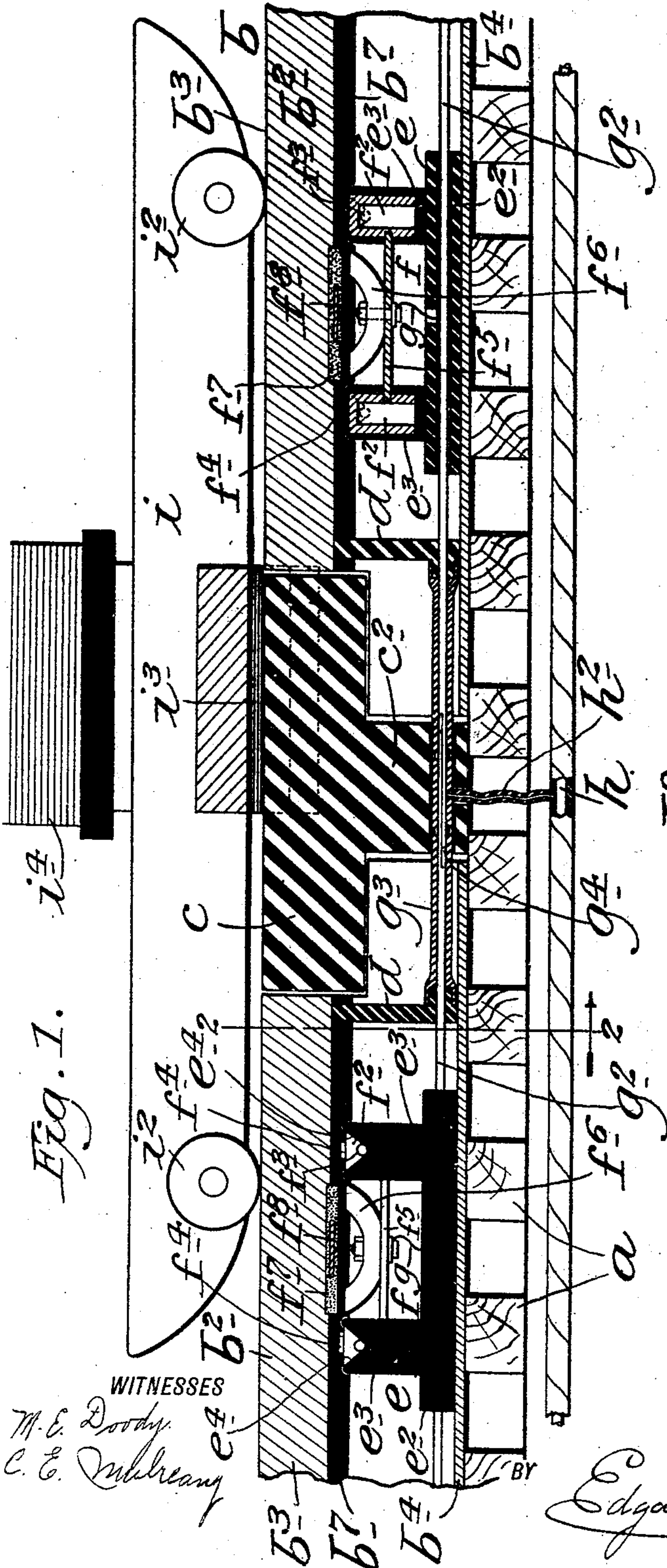


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THIRD RAIL ELECTRIC RAILWAY SYSTEM.
APPLICATION FILED APR. 25, 1908.

940,028.

Patented Nov. 16, 1909.



WITNESSES
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THIRD-RAIL ELECTRIC-RAILWAY SYSTEM.

940,028.

Specification of Letters Patent.

Patented Nov. 16, 1909.

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To all whom it may concern:

Be it known that I, CHARLES KOZESNIK, a citizen of the United States, and residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Third-Rail Electric-Railway Systems, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

The object of this invention is to provide a safe electrical circuit in the main feed wire of a third rail electric railway system through the rail, armature and contact devices to the rail, which is of a low resistance and high current capacity; a further object being to provide for a safe and practical insulation of the different parts of the third rail and the operative devices connected therewith; and with these and other objects in view the invention consists in the construction, combination and arrangement of the parts hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;—

Figure 1 is a sectional side view of separate sections of the third rail of an electric railway system and showing one of the car or motor shoes in connection therewith, together with the circuit wires, armatures and other parts and showing the insulation employed by me; and, Fig. 2 a transverse section on the line 2—2 of Fig. 1.

In the drawing forming part of this specification, reference being made to Fig. 1, I have shown at *a* the sleepers or supports of the third rail *b*, and said third rail is composed of separate sections *b*² and each section is composed of top and bottom members *b*³ and *b*⁴, the bottom members *b*⁴ being box-shaped in form, and the top and bottom members *b*³ and *b*⁴ being provided with flanges *b*⁵ and *b*⁶ between which is placed insulating material *b*⁷, and said flanges *b*⁵ and *b*⁶ and the insulating material *b*⁷ are secured together by means of bolts *b*⁸ passed there-through or in any preferred manner, all this construction being the same in general form as that described and claimed in U. S. Letters Patent granted to me April 7, 1908, No. 884,170. The opposite sides of the top or

contact portion *b*³ of the third rail are also provided with longitudinal and overhanging side flanges *b*⁹, and this construction particularly adapts the rail for use when side contact devices are employed as set out in the patent referred to and in an application for Letters Patent filed by me October 30, 1906, Serial No. 341,256, and in another application for Letters Patent of the United States filed April 18, 1908, Serial No. 427,789, said overhanging flanges *b*⁹ being designed to keep the sides of the rail free from ice, sleet, snow or other substances.

The third rail sections are separated by insulating blocks *c* which are fitted in between the top portions of said rail sections and are provided centrally with depending members *c*² which extend downwardly between the box-shaped bottom parts of the third rail sections, and the insulating blocks *c* may be secured in position in any desired manner, said blocks, as will be understood, being secured to the third rail sections, and adjacent to the ends thereof in which the insulating blocks *c* are fitted are transverse partitions *d* of insulating material which close the main parts of the bottom box-shaped portions of the third rail sections and prevent water, snow, ice or other substances from entering thereinto.

At regular intervals within the box-shaped bottom parts of the third rail sections are placed armature supports *e* which rest on the bottom of the box-shaped bottom portions of the rail sections and are composed of insulating material. Each of the armature supports *e* comprises a base plate *e*² and two pairs of transversely arranged uprights *e*³, and the uprights *e*³ are provided in the top thereof with notches or recesses *e*⁴, and mounted in the recesses *e*⁴ of the uprights *e*³ are armatures *f* which range longitudinally of the rail sections, and consist of end parts or blocks *f*² having pins *f*³ which rest in the recesses *e*⁴ of the uprights *e*³ and are also provided at the top thereof with insulating caps *f*⁴ to insure against accidental contact of the armature with the top of the third rail.

The end portions *f*² of the armature are made hollow and are connected by an aluminum tie plate *f*⁵ on which is placed a concavo-convex contact device *f*⁶ preferably composed of aluminum so as to insure against corroding and other destructive

chemical operations, and these contacts are also preferably composed of aluminum bent into bow-shaped or concavo-convex form, and secured to the bottom of the top portion
 5 of the rail sections directly over the armatures f are contact devices f^7 preferably composed of aluminum plates inclosed in carbon or to which carbon plates are secured, said devices being suitably secured
 10 to the bottom of the top portions of the third rail sections.

The armature devices f are, as will be understood, vertically movable and the contact devices f^6 of said armatures are connected
 15 with the plates f^5 by a bolt f^8 , and connected with the lower ends of these bolts are wires g which are connected with a conductor bar g^2 which passes longitudinally through the bottom portions of the rail sections and
 20 through the base members e^2 of the supports e of the armatures, and the conductor bar g^2 between the insulating partitions d is insulated as shown at g^3 , and the said conductor bar is composed of separate sections
 25 connected at the ends of the sections of the third rail as shown at g^4 , or in any desired manner, and I have also shown at h a main circuit wire which runs parallel with the track and the conductor bar g^2 which passes
 30 through the third rail sections is connected therewith at intervals by branch wires h^2 and preferably between the ends of the separate third rail sections.

The insulating blocks c between the separate third rail sections are preferably from
 35 five to eight inches in length, and in Fig. 1 of the drawing I have also shown at i a contact shoe carried, in practice, by the car or motor in the usual manner, and this contact shoe, any number of which may be employed, will be of considerable length preferably from three to four or five times the
 40 length of the insulating block c , and said contact shoe is also provided with contact rollers i^2 adapted to bear on the separate third rail sections and also with side contact devices i^3 adapted to bear on the opposite sides of the top portion of the third
 45 rail, as in the patent, and applications hereinbefore referred to. The contact shoes i are also provided with magnets i^4 , and as will be understood, the top or contact portion of the third rail or third rail sections is composed of magnetizable material and the shoes i are energized by the
 50 current from the rail as the car or motor moves along the track and, as the shoes i come in contact with the separate third rail sections, the armatures f are raised or
 55 picked up, and the circuit is completed through the main wire or conductor h , and through the contact devices f^6 and f^7 , and the separate sections of the third rail to the contact shoes and through the usual connections to the motor which is not shown,
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all as in the patent and applications hereinbefore referred to.

By means of my improved construction I provide a third rail electric railway construction which is especially designed for
 70 use in a high current capacity circuit so as to be able to charge the motor from the third rail and insure a low resistance circuit and a high resistance insulation and a better and more practical construction. 75

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

1. In a third rail electric railway system, a third rail composed of separate sections,
 80 the adjacent ends of which are insulated, said sections being composed of top bearing portions and box-shaped bottom portions insulated from each other, the box-shaped bottom portions being closed at the ends by
 85 transverse insulating partitions, a conductor passing through the box-shaped bottom portions and insulated at the ends of the sections, vertically movable armatures placed in the separate sections, and contact devices
 90 secured to the bottom of the top bearing portions of the third rail sections over said armatures.

2. In a third rail electric railway system, a third rail composed of separate sections
 95 comprising top bearing portions and box-shaped bottom portions insulated from each other, insulating blocks placed between the ends of said sections, the box-shaped portions of said sections being also provided
 100 adjacent to their ends with transverse insulating partitions, a conductor bar passed through the bottom portions of said sections and composed of separate parts connected at the ends of the sections, said bar being also
 105 insulated at said ends of the sections, vertically movable armatures placed in the bottom box-shaped portions of said sections and contact devices secured to the bottom of the top bearing portions of said third rail sections
 110 over said armatures.

3. In a third rail electric railway system, a third rail composed of separate sections comprising top bearing portions and box-shaped bottom portions insulated from each
 115 other, insulating blocks placed between the ends of said sections, insulating partitions placed in the end parts of the box-shaped bottom portions, a conductor bar passed through the bottom portions of said sections and composed of separate parts connected at the ends of said sections, said bar being also insulated at said ends of the sections, vertically movable armatures placed in the bottom box-shaped portions of said
 120 sections, and contact devices secured to the bottom of the top bearing portions of the said third rail sections and over said armatures; said armatures being composed of vertically arranged end members, a tie-
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 130

plate connecting said end members, contact devices secured to said tie-plate, and insulating caps placed on said end members.

4. In a third rail electric railway system, an armature composed of hollow vertically arranged end members, a central plate connecting said members, a contact device secured to said plate, and insulating caps placed on said end members.

5. In a third rail electric railway system, a third rail composed of separate sections comprising top bearing portions and bottom box-shaped portions connected and insulated, vertically movable armatures placed in the box-shaped bottom portions of the third rail sections and composed of connected end members and a central contact device, the end members being provided with insulating caps.

6. In a third rail electric railway system, a third rail composed of separate sections comprising top bearing portions and bottom box-shaped portions connected and insulated, vertically movable armatures placed in the box-shaped bottom portions of the third rail sections and composed of connected end members and a central contact device, the end members being provided with insulating caps, the top bearing portions of the rail sections being also provided over said armatures with contact devices composed of aluminum plates covered with carbon.

7. In a third rail electric railway system, a third rail composed of separate sections, insulating blocks placed between said sections, said sections being also composed of top bearing portions and box-shaped bottom portions insulated from each other, the box-shaped bottom portions being closed at the ends by transverse insulating partitions.

8. In a third rail electric railway system, a third rail composed of separate sections,

insulating blocks placed between said sections, said sections being also composed of top bearing portions and box-shaped bottom portions insulated from each other, the box-shaped bottom portions being closed at the ends by transverse insulating partitions, and a conductor passing through the box-shaped bottom portions and insulated at the ends of the sections.

9. In a third rail electric railway system, vertically arranged hollow insulating supports open at the top, an armature device composed of hollow end members vertically movable in said supports, a horizontal plate connecting said end members, and a contact device connected with said plate.

10. In a third rail electric railway system, an armature device composed of vertically arranged hollow insulating end supports open at the top, an armature composed of hollow end members vertically movable in said supports, a horizontal plate connecting said end members, and a contact device connected with said plate and composed of aluminum.

11. In a third rail electric railway system, an armature device composed of vertically arranged hollow insulating end supports open at the top, an armature composed of hollow end members vertically movable in said supports, a horizontal plate connecting said end members, a contact device connected with said plate, and insulating caps placed on said vertically arranged end members of the armature.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 24th day of April 1908.

CHARLES KOZESNIK.

Witnesses:

M. E. DOODY,

C. E. MULREANY.