(No Model.) 3 Sheets—Sheet 1.

E. M. BOYNTON.

ELECTRIC RAILWAY.

No. 556,320. Patented Mar. 10, 1896.

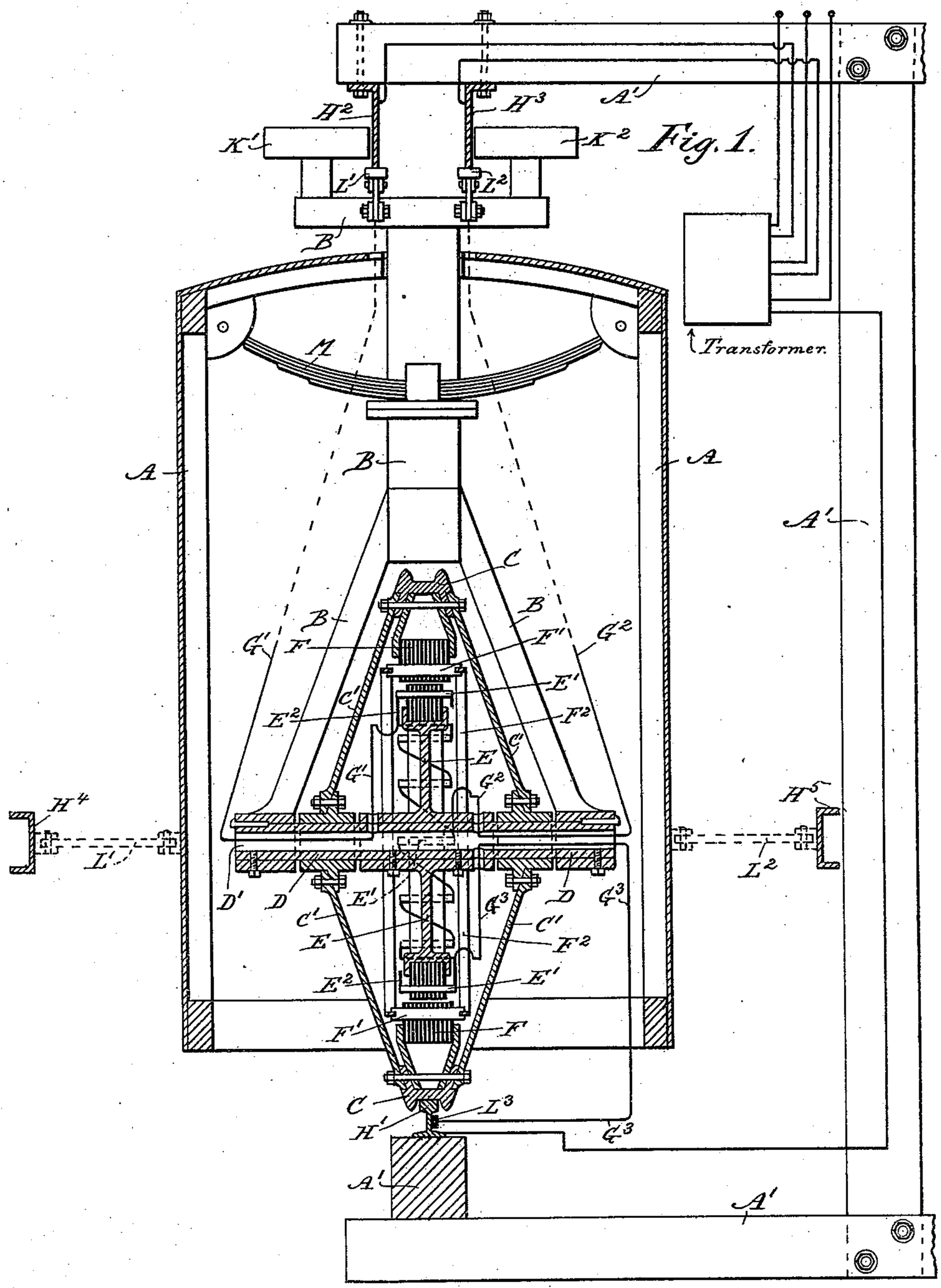

Fig. 1.

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Wm. H. Boynton

INVENTOR

Eben Woody Boynton

(No Model.) 3 Sheets—Sheet 2.

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Fig. 5.

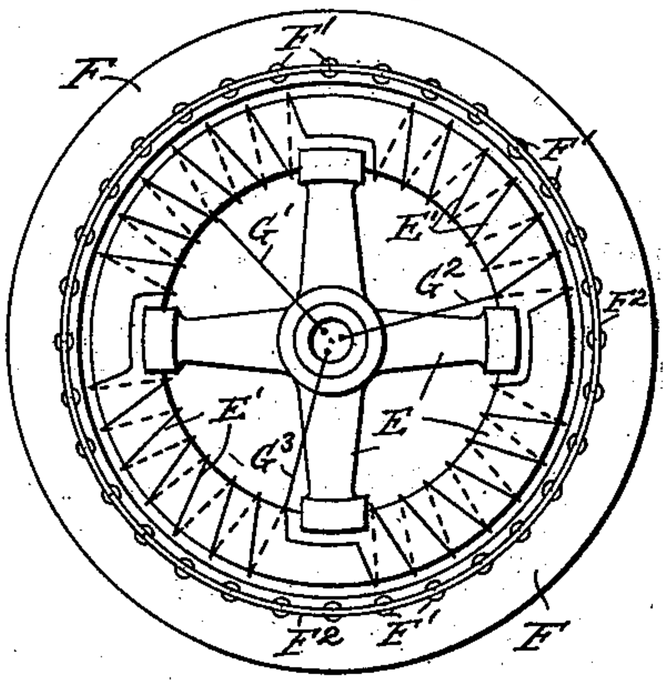


Fig. 6.

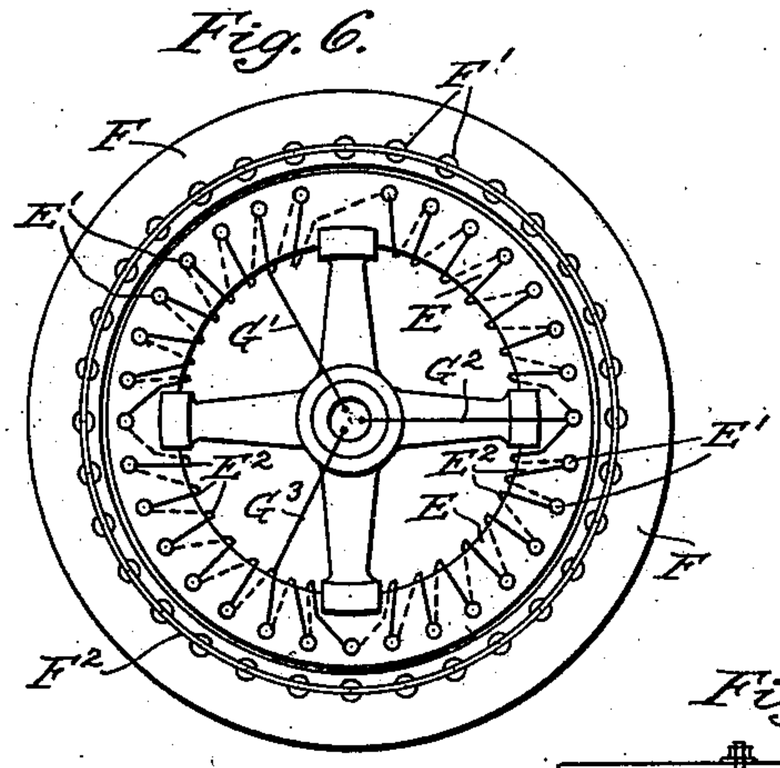
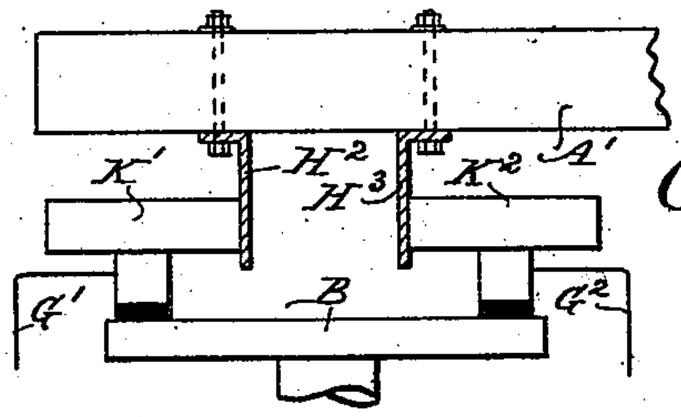


Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

E. M. BOYNTON.

ELECTRIC RAILWAY.

No. 556,320. Patented Mar. 10, 1896.

Fig. 3.

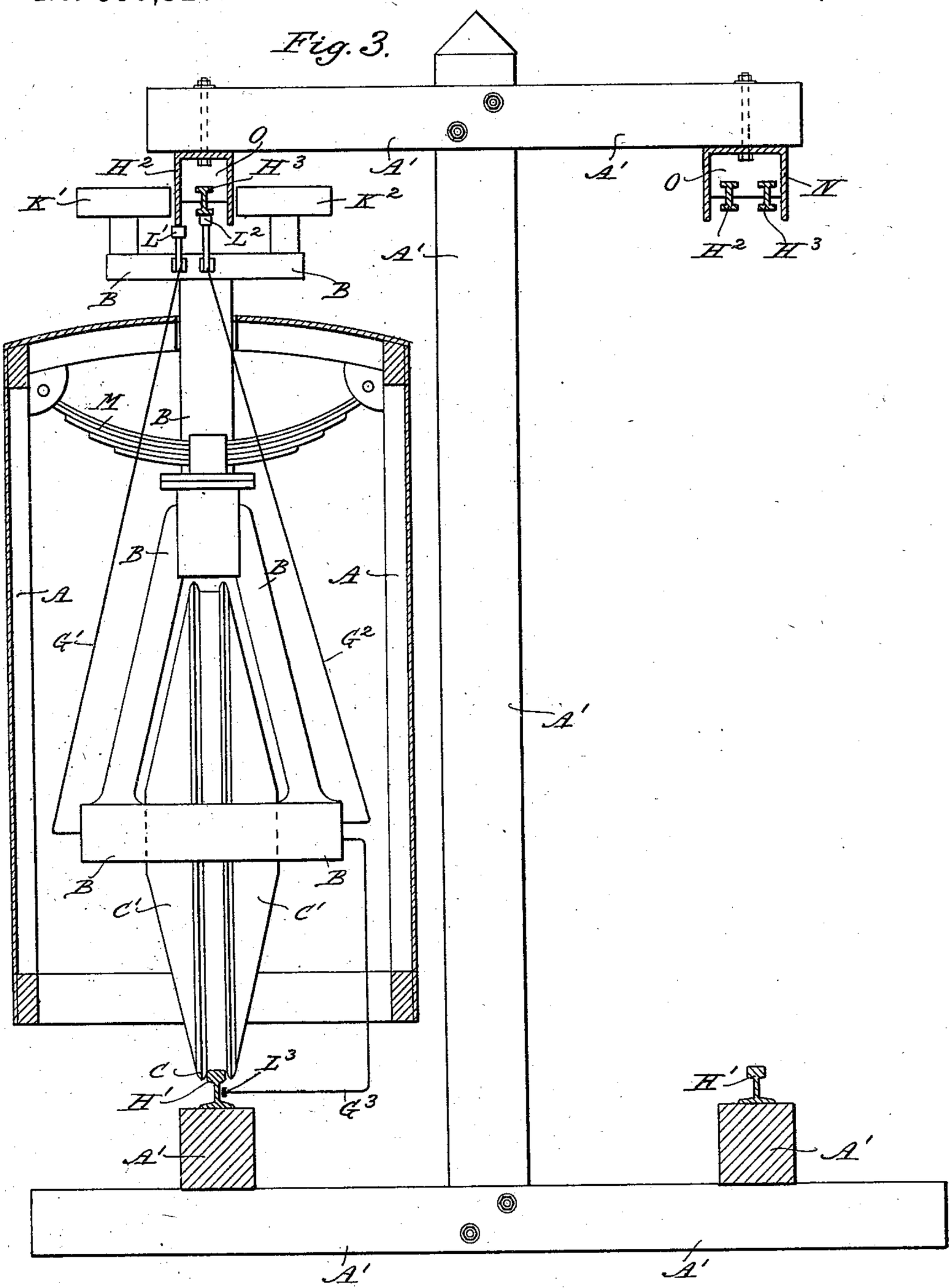
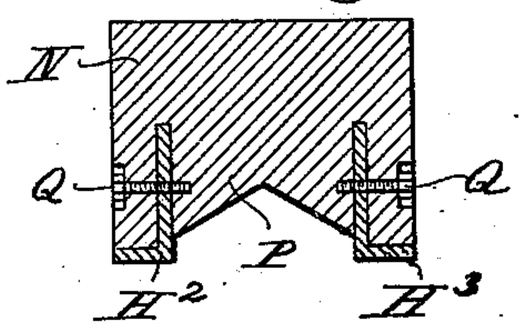


Fig. 4.



WITNESSES:

D. C. Reusch

Allen Boynton

INVENTOR

Eben Moody Boynton

UNITED STATES PATENT OFFICE.

EBEN MOODY BOYNTON, OF WEST NEWBURY, MASSACHUSETTS.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 556,320, dated March 10, 1896.

Application filed March 6, 1895. Serial No. 540,708. (No model.)

To all whom it may concern:

Be it known that I, EBEN MOODY BOYNTON, a citizen of the United States, and a resident of West Newbury, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

My invention has for its object to provide means for the utilization of multiphase currents in propelling electric-railway cars. The position of the upper guide, as illustrated in my Patents Nos. 467,679 and 474,331, offers an advantage for such a system, as the guide itself may be utilized as conductor, and the posts and cross-pieces readily would lend themselves for the stringing of primary wires and hanging of transformers without making the arrangement in any way obstructive or dangerous. I obtain these objects by means illustrated in the accompanying drawings, in which—

Figure 1 illustrates the motor-car and motor in cross-section with the supporting structure. Fig. 2 is a modification of the same, in which the guide-wheels are utilized as current-collectors. Fig. 3 shows two more modifications of the guide and conductors. Fig. 4 illustrates the use of a timber guide in combination with metal conductors. Figs. 5 and 6 are diagrammatical views illustrating the winding of the motor.

In the drawings, A represents the car and A′ the structure with the supporting-rail H′ and guide-rails H^2 and H^3.

B is the frame of the motor, to which the stationary shaft D is fastened, the wheel C′ with tire C revolving on same.

E is the field-magnet attached to the shaft, and E′ its conductors. The armature F with its conductors F′ is fastened to the wheel and revolves with the same.

I have shown in Figs. 5 and 6 diagrammatical views of the motor without going into any unnecessary details of the winding, as I do not limit myself to any special form, and have represented the motor as having a field consisting of three coils only (with the purpose of making the diagrams clear) and connected with each other so as to form one continuous coil, the three coils being connected at their junctions with the wires G′, G^2, and G^3, supplying them in this instance with a three-phase alternating current. The armature is shown as having rings F^2 on either side, to which all conductors F′ are connected. In Fig. 5 the winding is represented as being on the surface of the field-ring, while in Figs. 1 and 6 the conductors E′ are embedded in the ring and united with each other by means of connectors E^2. The methods of connecting these conductors with each other may of course be various.

In Fig. 1 the upper and lower conductors only of the field and armature respectively are shown, the others being left out so as to leave the view of the main parts unobstructed.

Contact-shoes L′ and L^2 take the current, respectively, from the conductors H^2 and H^3. The wires G′ and G^2, leading through the aperture D′ in the shaft to the field-magnet, take the current from the contact-shoes that slide against the under side of the conductors and guides H^2 and H^3.

I do not limit myself to any special form of these overhead conductors, as their forms and the combination of several forms may be manifold. There is, for instance, in Fig. 3 only one of the conductors, H^2, utilized as a guide, and the other, H^3, placed in its interior and suspended from the insulator O. In the same figure is also shown another variation, the two conductors H^2 and H^3 both being inclosed in the guide N and supported by the insulator O. The rail H′ may then serve as the third conductor, or N may be used for that purpose.

It may in some cases be advantageous to make the guide N, as illustrated in Fig. 4, of wood or other insulating material and insert the conductors H^2 and H^3 in same, holding them in position by means of screws Q Q. To prevent any water that may collect at the lower surface flowing from one conductor to the other, a groove P is milled out in the lower side of the guide.

In Fig. 2 I illustrate another variation of Fig. 1. Here the guide-wheels K′ and K^2 are in constant contact with the conductor-guides H^2 H^3 for the purpose of utilizing them as current-collectors as well as guide-wheels. They are, as indicated, insulated from the rest of the framework. In that case the rim of the guide-wheel is made of conducting material, while in the other arrangements shown the

wheels are non-conducting. In some cases it may be necessary to place the conductors at the sides of the car instead of at the top, as illustrated in Fig. 1. Here H^4 and H^5 are the conductors, in which case H^2 and H^3 only would serve as guides. L′ and L^2 are current-collectors.

In the majority of cases the conductors referred to in this specification would be secondary conductors connected with transformers placed at intervals along the line, and these transformers again would be connected to primary wires from the power-station, strung along the line, for which the structure itself would be well adapted.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of a single rail-supported railroad-car, with a railroad structure having one supporting-rail, a compound overhead guide or guides consisting of two or more conducting and guiding rails, and an induction-motor placed in the car and supplied with a multiphase current from said guides; substantially as described.

2. The combination of a single rail-supported railroad-car with a railroad structure having one supporting and conducting rail, a compound overhead guide consisting of two or more conducting and guiding devices, and an induction-motor placed in the car and supplied with a multiphase current from said supporting and guiding devices, substantially as described.

3. The combination of a single rail-supported railroad-car with a railroad structure having one supporting-rail, an overhead wooden guide having two or more conducting and guiding devices, and an induction-motor placed in the car and supplied with a multiphase current from said conducting devices substantially as described.

4. The combination of a single rail-supported railroad-car with a railroad structure having an overhead wooden guide with two or more conductors embedded in it, a conducting and supporting rail, and an induction-motor placed in the car and supplied with a multiphase current from said conductors substantially as described.

5. The combination of a single rail-supported railroad-car with a railroad structure having one supporting-rail, conducting and guiding devices, and an induction-motor placed in the car and supplied with a multiphase current from said conducting devices, substantially as described.

Signed at New York, in the county of New York and State of New York, this 27th day of February, A. D. 1895.

EBEN MOODY BOYNTON.

Witnesses:
D. C. REUSCH,
ALLEN BOYNTON.