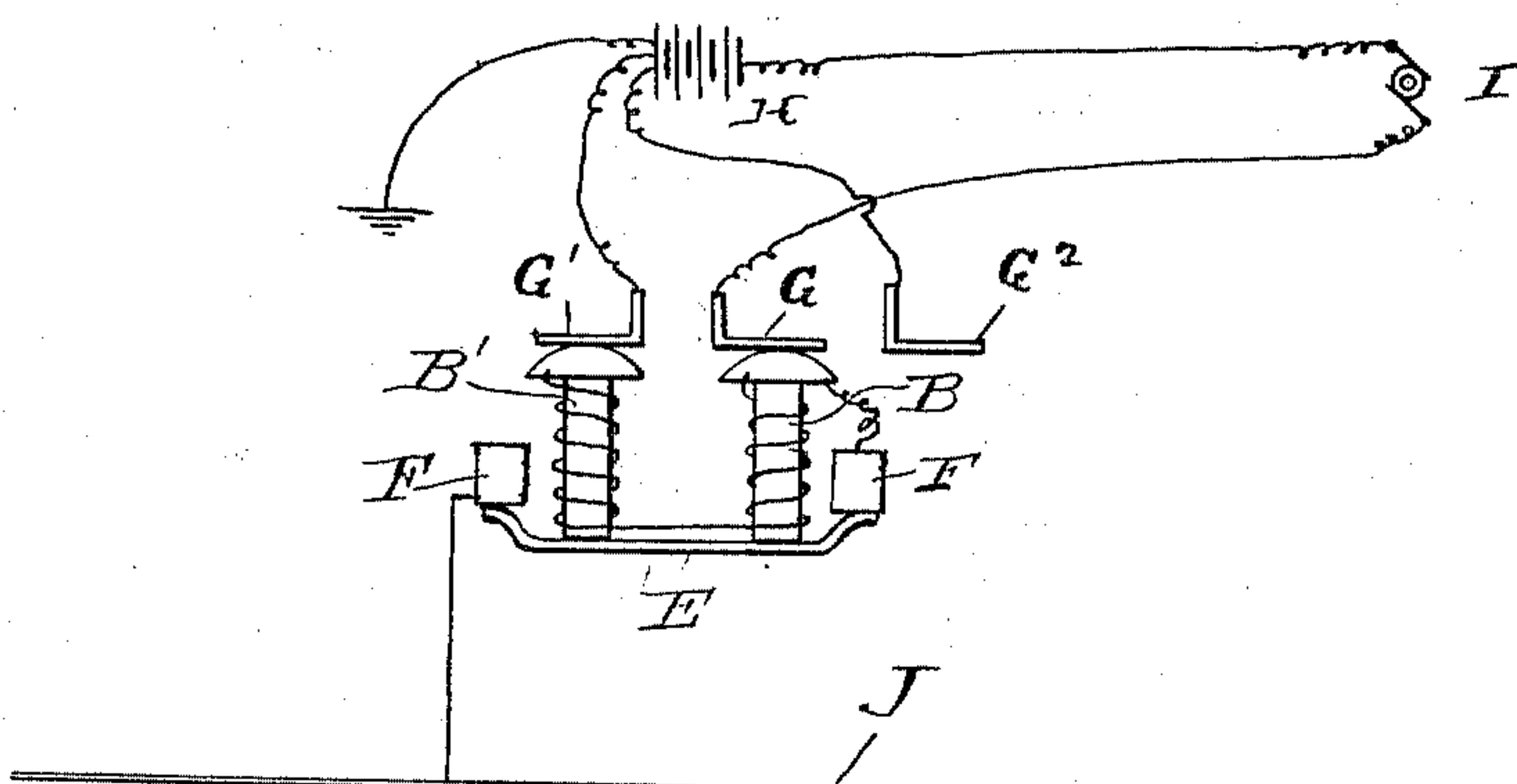
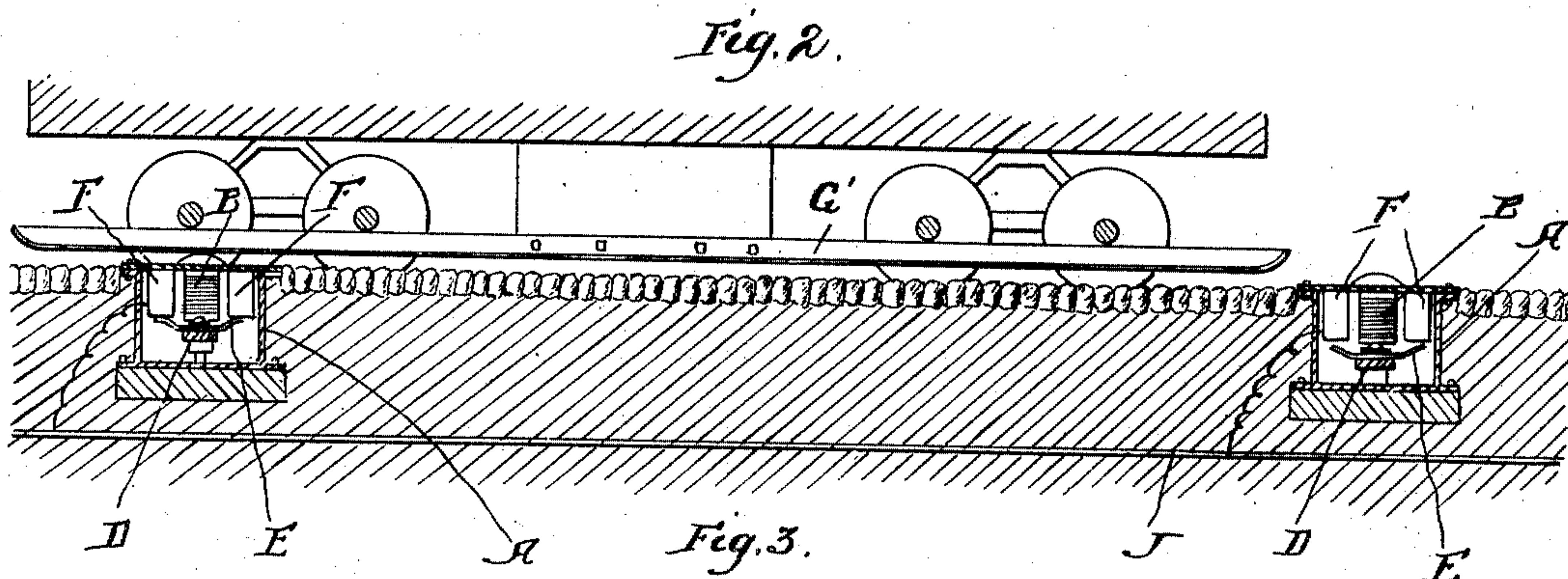
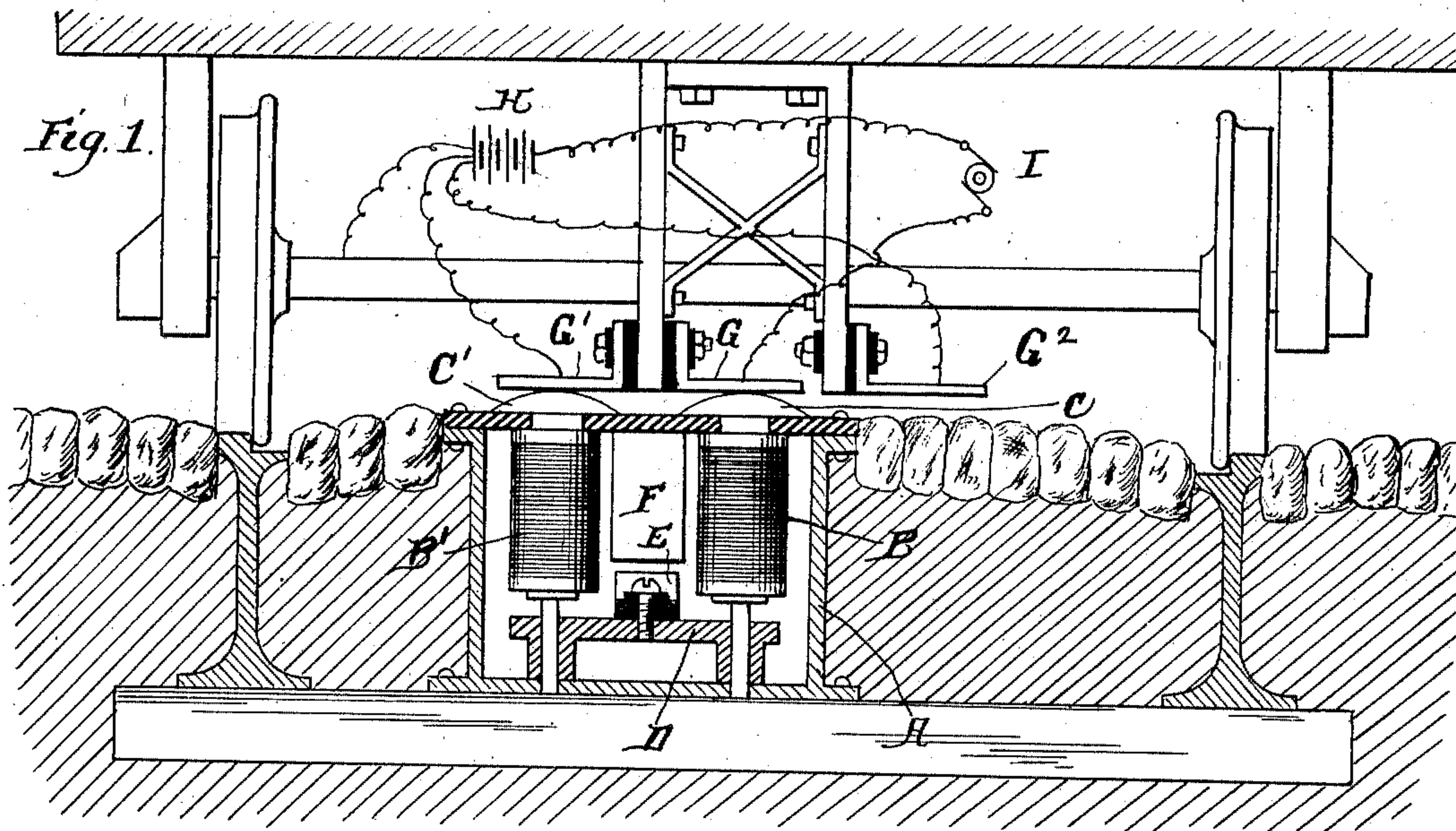


No. 760,325.

PATENTED MAY 17, 1904.

W. R. FEARN.
ELECTRIC RAILWAY.
APPLICATION FILED DEC. 16, 1903.

NO MODEL.



Witnesses:
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Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM R. FEARN, OF CAMDEN, NEW JERSEY.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 760,325, dated May 17, 1904.

Application filed December 16, 1903. Serial No. 185,329. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. FEARN, a citizen of the United States, residing at Camden, county of Camden, and State of New Jersey, have invented a certain new and useful Improvement in Electric Railways, of which the following is a specification.

My invention relates to a new and useful improvement in electric railways, and has for its object to provide an electric-railway system in which the current is taken from surface contacts arranged at intervals along the road and only the contact directly underneath the car is alive and this contact is connected to the live wire while the car is over said contact through the agency of magnets below the contacts, said magnets being energized from a source of electricity carried by the car, the electricity being carried to the magnets through rails coming in contact with the contacts, and these rails also take the current from the contacts for the running of the motor.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a cross-section through a road-bed and a portion of a car, showing my improved method of construction; Fig. 2, a longitudinal section through a portion of a road-bed and car; Fig. 3, a diagrammatical view showing the wiring.

A represents boxes arranged at intervals along the road-bed between the rails and sunk in the ground so that the tops of the boxes are flush with the upper surface of the road-bed. The tops of said boxes are formed of insulating material. Within each of these boxes are arranged two magnets B and B', the cores of which are connected to the surface contacts C and C', respectively. Below these magnets is arranged an armature D, which is adapted to

normally move away from the magnets by gravity, but will move upward into contact with the magnets when said magnets are energized. This armature carries a spring-connector E, insulated from the armature, and upon the inside of the box is arranged two contacts F, the spring-connector being out of contact with said contacts; but when the armature D is raised the ends of said spring-connector are brought in contact with the two contacts F, connecting the same together.

G and G' are two rails carried by and insulated from the car. These rails are adapted to come in frictional contact with the surface contacts C and C' as the car travels along, the rail G coming in contact with the surface contact C and the rail G' coming in contact with the surface contact C'.

H is a storage battery carried by the car, and I is the motor. The rail G is connected to one brush of the motor I, and the other brush of the motor is connected to one terminal of the storage battery H. The other terminal of the storage battery is connected to the rail G'. The winding of the magnet is connected at one end to the surface contacts C and after being coiled around the magnet B passes across to the magnet B', is coiled about said magnet, and then the other end is connected to the surface contact C'. Therefore when the rails G and G' come in contact with the surface contacts C and C' a current passes from the storage battery through the magnets, through the motor back to the storage battery, thus energizing the magnets and raising the armature, bringing the spring-connector E in connection with the contacts F, and as one of the contacts F is connected to the feed-wire J and the other contact connected to the surface contact C the current will then pass from the feed-wire, through the spring-connector E, to the contact C, through the rail G, through the motor, through the storage battery, to the ground, which is connected to the opposite terminal of the storage battery. Thus the current from the feed-wire while operating the car will also charge the storage battery. In order to have the current always pass

through the storage battery in the same direction whichever way the car is traveling, I provide an extra rail G^2 , which when the car is traveling as shown in Fig. 1 will be idle; but when the car is reversed this extra rail G^2 will come in contact with the surface contact C' and the rail G' will then be idle. The rail G^2 is connected to the storage battery in the same manner as the rail G' .

The advantages of this system will be obvious to all skilled in the art in that no open conduit is needed, and the cost of insulation will be small, as the boxes are always arranged at intervals of fifteen to twenty feet apart, and said boxes can be so sealed as to prevent any damage of the working parts upon the interior, and no accidents can happen on account of only the contact directly beneath the car being alive and being rendered inactive as soon as the car passes from over them.

Of course I do not wish to be limited to the exact construction here shown, as slight modifications could be made without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is—

1. In an electric system of the character described, the combination of a car with a series of boxes arranged at intervals along the road-bed, two surface contacts arising from each box, one of the contacts being midway between the railroad-rails, three rails carried by the car and insulated therefrom, one of the rails being in the middle of the car, the other two arranged equally distant upon each side, the middle rail adapted to come in contact with the surface contact midway between the two railroad-rails when the car is traveling in either direction, one of the side rails carried by the car adapted to come in contact with the other surface contact when the car is traveling in one direction, and the other rail carried by the car adapted to come in contact with the side surface contact when the car is traveling in the opposite direction, one rail carried by the car being always idle, magnets arranged within the boxes, said magnets being wound in series, one end of the wire being connected to one surface contact and the other end to the other, a motor carried by the car, a storage battery carried by the car, one terminal of the battery connected to the middle rail and the other terminal of the battery connected to the two side rails, an armature arranged within the box and adapted to be operated by the magnets, a feed-wire, means whereby the operating of the armature will establish an electric connection between the feed-wire and the motor in the car, as specified.

2. In an electrical railway system of the character described, the combination of a car, a motor for driving the car, a feed-wire buried in the ground with a series of hermetically-sealed boxes arranged at intervals along the

road-bed, the upper surfaces of said boxes being on a level with the road-bed, two surface contacts arranged upon the top of each box, two magnets arranged within each box, said magnets being wound in series, one end of the wire being connected to one surface contact and the other end to the other surface contact, two rails carried by the car and insulated therefrom, said rails adapted to contact different surface contacts as the car travels forward, a storage battery carried by the car, one terminal of the storage battery electrically connected to one contact-rail, the other contact-rail electrically connected to one brush of the motor, the other brush of the motor connected to the other terminal of the storage battery, an armature arranged within the box adapted to be attracted when the magnets are energized, two contacts arranged within the boxes, a spring-connector carried by the armature and insulated therefrom, one of the contacts electrically connected to the feed-wire, and the other contact electrically connected to the surface contact which is adapted to come in contact with the rail connected directly to the motor, the terminal of the storage battery opposite to the terminal which is connected directly to the motor being connected to the ground, as and for the purpose specified.

3. In an electrical system of the character described, the combination of a car, motor for driving the car, and a feed-wire buried in the ground with a series of hermetically-sealed boxes arranged at intervals along the road-bed and flush therewith, two surface contacts arranged upon the upper surface of each of the boxes, two magnets arranged within each box, said magnets wound in series, the wire connected at each end to a different surface contact, an armature adapted to be attracted by said magnets, two contact-rails carried by the car and insulated therefrom adapted to contact the different surface contacts, a storage battery carried by the car, one terminal of the storage battery electrically connected with the ground and also connected to one contact-rail, the other terminal of the storage battery connected to one brush of the motor, the other brush of the motor connected to the other contact-rail, two contacts arranged within the boxes, one electrically connected to the feed-wire, the other connected to the surface contact which comes in contact with the rail electrically connected directly with the motor, a spring-connector carried by the armature and insulated therefrom adapted to connect the two contacts within the box together when the armature is attracted by the magnets, a third contact-rail carried by the car and insulated therefrom and connected electrically to the same terminal of the storage battery as that terminal which is connected to the ground, the boxes containing the magnets

being arranged one side of the center so that
one contact-rail will be brought in contact with
one of the surface contacts when the car is re-
versed, and the contact-rail similarly connect-
5 ed and previously used will then be idle, as
and for the purpose specified.

In testimony whereof I have hereunto af-

fixed my signature in the presence of two sub-
scribing witnesses.

WILLIAM R. FEARN.

Witnesses:

JOHN R. FOX,

JOHN A. CANTRELL.