

(No Model.)

H. W. LIBBEY.
ELECTRIC RAILWAY.

No. 597,202

Patented Jan. 11, 1898.

Fig. 1.

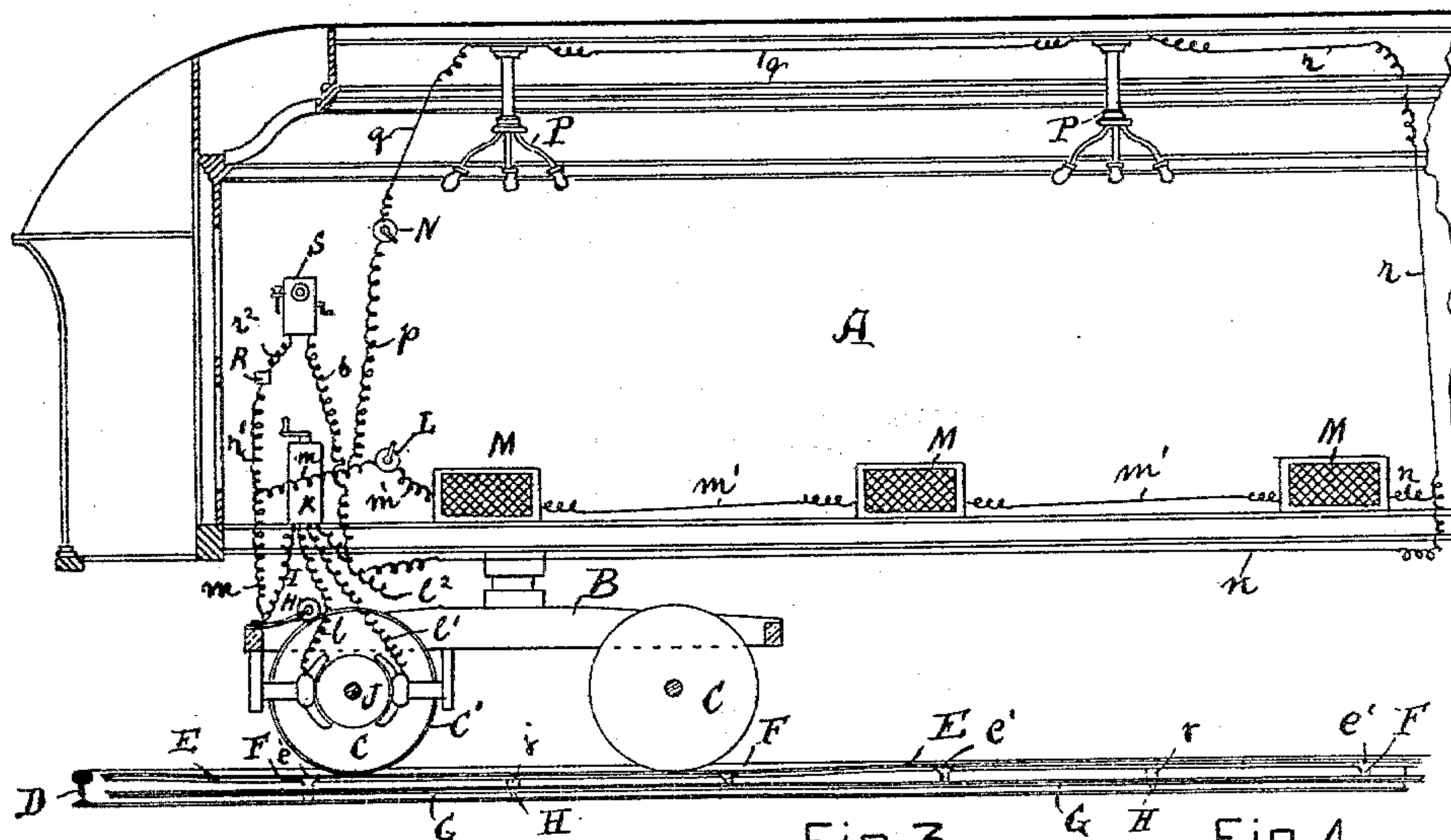


Fig. 2.

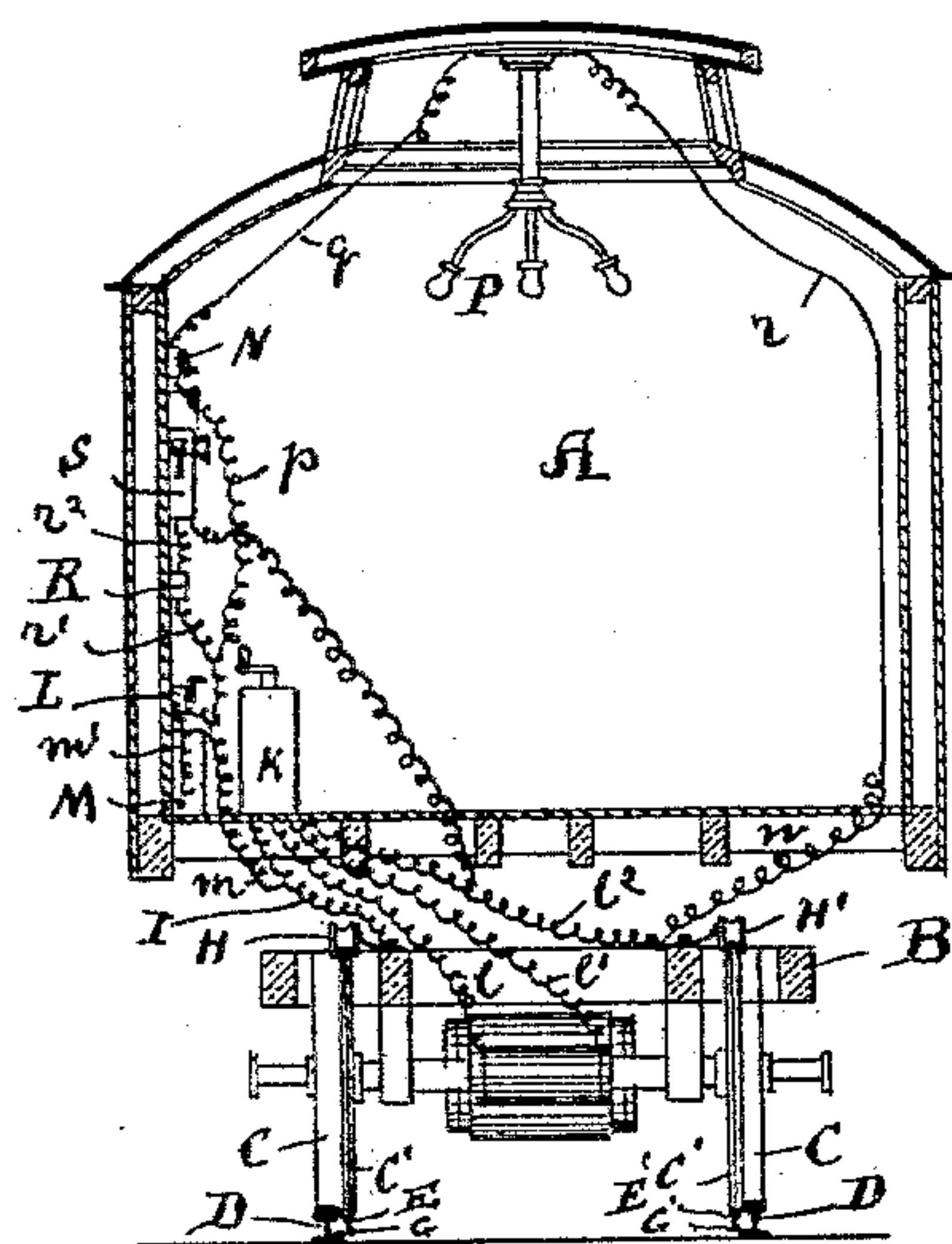


Fig. 3.

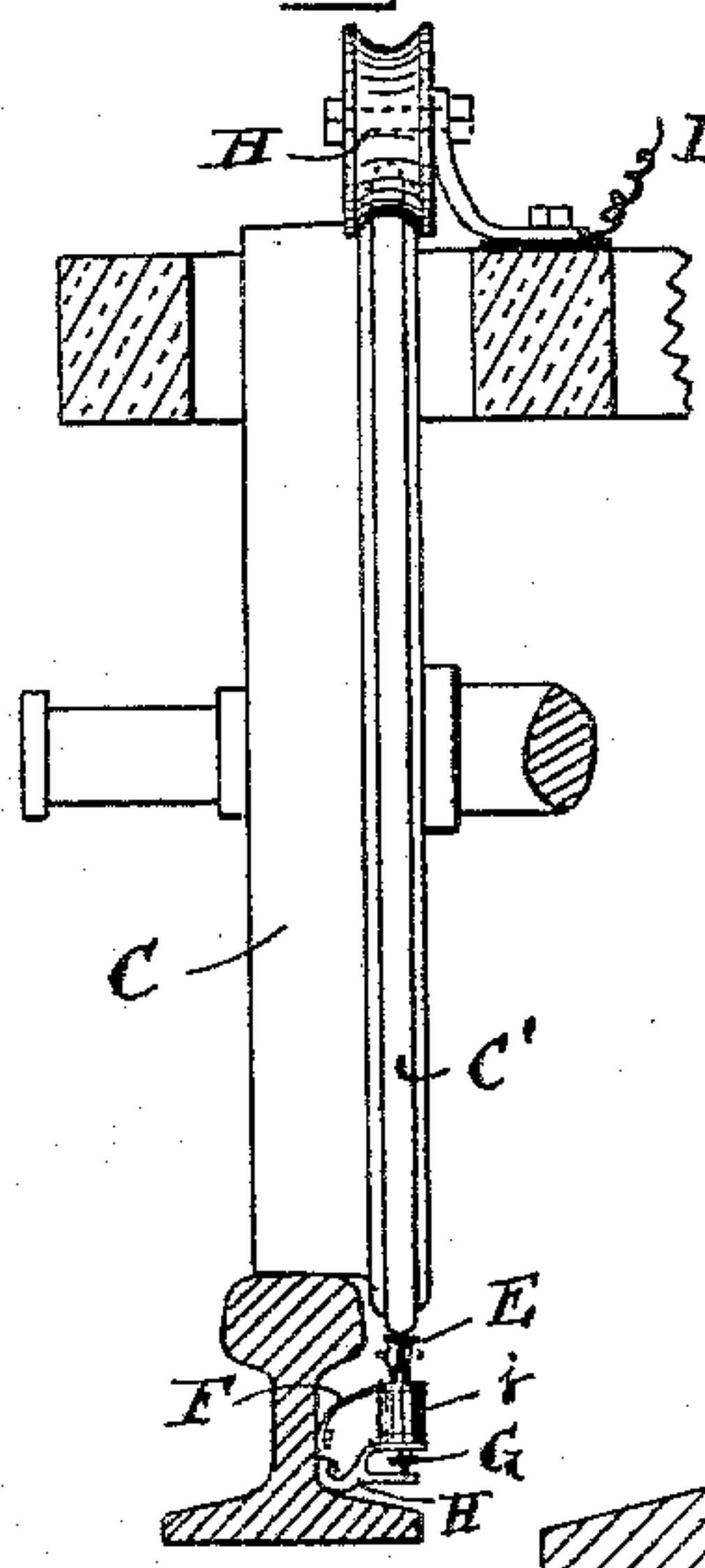


Fig. 4.

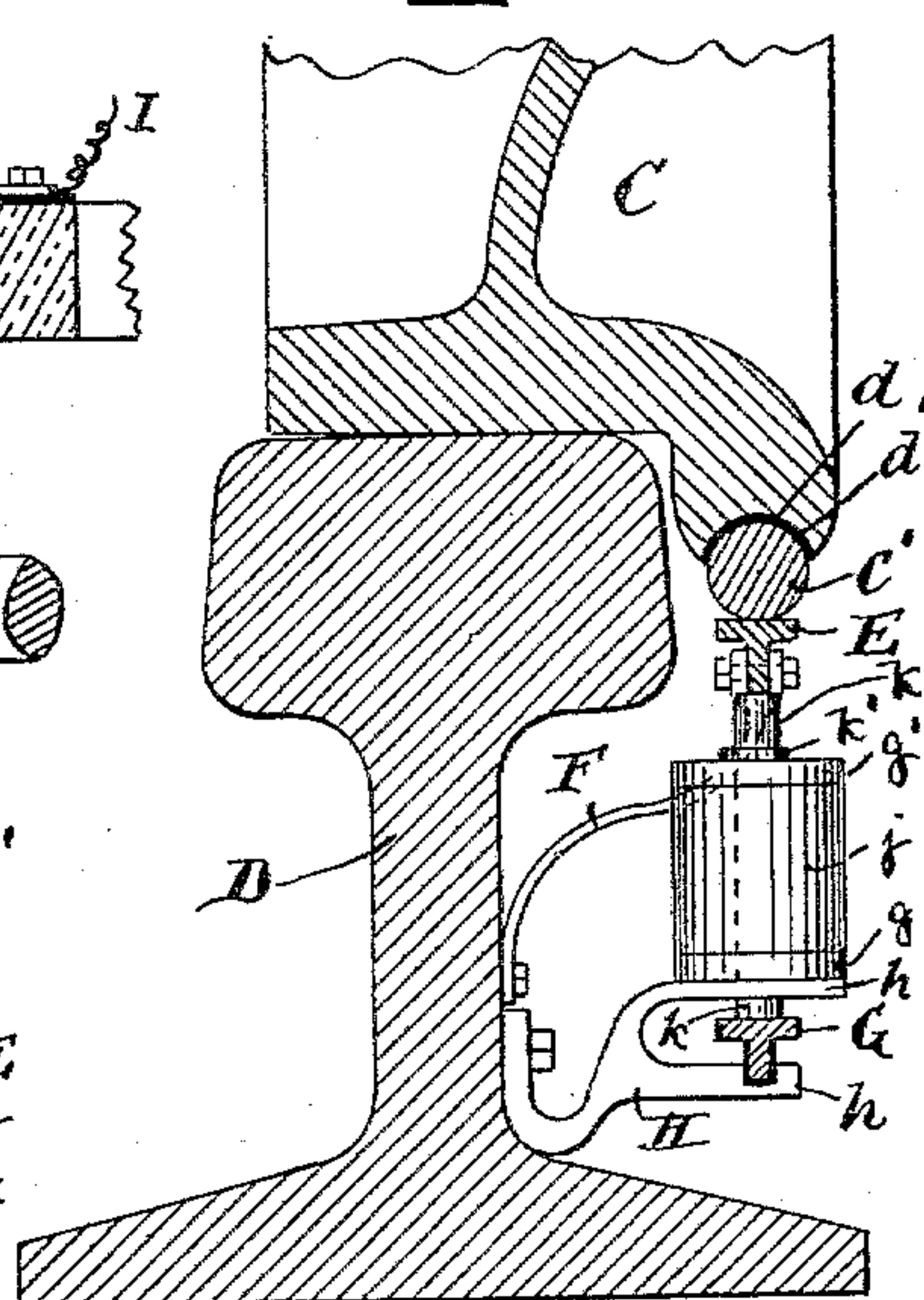
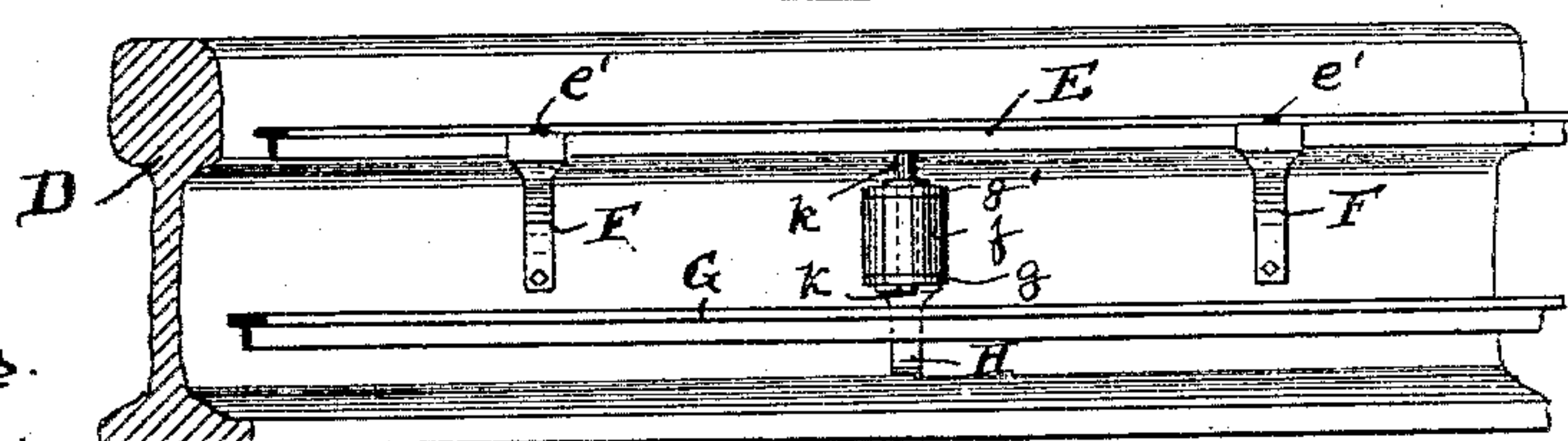


Fig. 5.



Witnesses.

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UNITED STATES PATENT OFFICE.

HOSEA W. LIBBEY, OF BOSTON, MASSACHUSETTS.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 597,202, dated January 11, 1898.

Application filed March 10, 1897. Serial No. 626,853. (No model.)

To all whom it may concern:

Be it known that I, HOSEA W. LIBBEY, a citizen of the United States, and a resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Electric Systems for Propelling, Heating, Lighting, and Telephoning from Railroad-Cars, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to means for propelling, heating, and lighting railroad-cars by electricity, and also in means for telephoning from said cars to any desired point or station.

The invention consists in the construction of the conductors for conveying the electricity to the cars and returning same to the terminal, also in the means for conducting the electricity from and returning it to the conductors and in conducting the electricity to electric heaters, electric lamps, and telephones, so that one or all may be operated, as desired.

Referring to the accompanying drawings, Figure 1 represents a longitudinal vertical section of a portion of a railroad-car embodying my invention. Fig. 2 is a transverse vertical section of same. Fig. 3 is an end view of one of the wheels, contacts, and section of the rail. Fig. 4 is a section through the rail and portion of a wheel, the main conductor, and supports. Fig. 5 is a side view of the rail, electric conductor, and supports in their normal position.

A represents a railroad-car, B one of the trucks, C the wheels, and D the rails, all of which may be of ordinary construction, except the wheels upon one of the axles, (preferably the front one,) which wheels have formed in the edges of their flanges a half-round recess *d*, (see Fig. 4,) that is lined with a suitable insulating material *d'*, onto which is shrunk or otherwise fitted a ring *C'* of copper wire or other good electric conductor.

E E' are T-pieces of copper or other suitable metal supported on the inside of each track by a series of springs F. These T-pieces are made up of a number of short lengths—say fifteen or twenty feet long—connected together, but insulated from each other, as shown at *e'*. (See Figs. 1 and 5.) The copper rings *C'* on the wheels C are al-

ways in contact with some section of these T-pieces E.

Immediately below each of the T-pieces E is a T-piece G G' of good conducting metal, through one of which the electric current is conducted to the car and returned through the other. In order to prevent any chance of danger from these T-pieces G G', I prefer to insulate them by coating them with gutta-percha or other suitable material, which can be cut away on the upper surface where it is desired to make contacts, as hereinafter described. These T-pieces G are supported by but insulated from brackets H, attached to the web of the rail D. These brackets H are forked at their outer ends, the prongs *h h'* standing one over the other, as shown in Fig. 4, the lower prong supporting the conductor G and the upper one a spring contact-piece consisting of two hard-rubber disks *g g'* and a cylinder *j* of soft rubber, through the center of which passes a rod *k*, formed near its upper end with a collar *k'*, that rests upon the upper disk *g'*. The lower disk *g* rests upon and is supported by the fork *h* of the bracket H. When in its normal position, the soft-rubber spring *j* and rod *k* are raised, so that the lower end of the rod *k* is out of contact with the conductor G, (see Fig. 5,) but when a section of the T-piece E is depressed by the hoop *C'* in the flange of the wheel C, as shown in Fig. 4, the lower end of the rod *k* will be in contact with the conductor G, and thus make an electric connection between them. The current passing from the conductor G through the contact-piece *k* and a section of the T-piece E to the hoop *C'* of the wheel C is then taken by a trolley H, running upon said hoop *C'*, and conducted by a wire *I* to a switch K, and thence by a wire *l* to an electric motor J, then returning by wire *l'* to the switch, and thence passing by a wire *l''* to a trolley H', in contact with the hoop *C'* in the opposite wheel C, and thence through spring connections, as before described, to a return T-piece E'. Connected to the wire *I* is a wire *m*, that leads to a switch L, and thence by wires *m'* to a series of electric heaters M M, the wire *n*, connected to the wire *l''*, completing the circuit. To the wire *m* is also connected a wire *p*, that leads to a switch N, and thence by wires *q* to a series of electric lamps

P, and the circuit is completed by a wire r , connected to the return-wire n . To the wire m is also connected a wire r' , that leads to a reducer R, that by wire r^2 connects with a telephone S, the return-wire s of which connects with the wire l^2 , and thence conducted as described to the return T-piece E', to which wires are connected at suitable points to connect with a station or central station.

10 In operation the electricity will flow along the conductor G, and as the hoop C' depresses the T-piece E connection will be formed by the rod k , so that the current will flow through said hoop C' on the wheel C, and is then taken
15 off by the trolley H, and thence to the wire I, from which it is conducted to the various switches, thence passing through the motor, the heaters, the electric lights, and telephone, and returned by suitable wires to the trolley
20 H' on the opposite side, and thence through the rim C' to the T-piece E' and through the rod k to the return T-piece G'. One or more of these circuits can be opened or closed at pleasure, so that one or all of them can be
25 placed in operation, as may be required.

What I claim is—

1. In a railroad an electric conductor supported by the side of the rail a T-piece consisting of a number of sections insulated from
30 each other and supported by springs from the web of the rail and spring contact-pieces consisting of two disks of hard rubber, a cylinder of soft rubber and a metal rod passing through the center substantially as set forth.

2. In a railroad an electric conductor consisting of a T-piece and a yielding T-piece arranged over same both supported from the web of the rail, spring contact-pieces interposed between them in combination with wheels each having a hoop or ring of copper
40 or other suitable metal let into the outer edge of the wheel-flanges but insulated therefrom substantially as set forth.

3. In a railroad an electric conductor consisting of a T-piece and a yielding T-piece
45 made up of short sections insulated from each other and supported from the web of the rail, spring contact-pieces between them in combination with a car having wheels with a metal hoop or ring let into but insulated
50 from the edge of the flange, trolleys connected to the truck and in contact with said metal hoops, wire leading from the trolley on one side to a motor, a series of electric heaters, lamps and a telephone and return-wires lead-
55 ing to the trolley on the opposite side and thence through the rim of the wheel to the return T-piece on that side substantially as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 27th day of February, A. D. 1897.

HOSEA W. LIBBEY.

Witnesses:

CHAS. STEERE,

EDWIN PLANTA.