No. 629,631. Patented July 25, 1899.

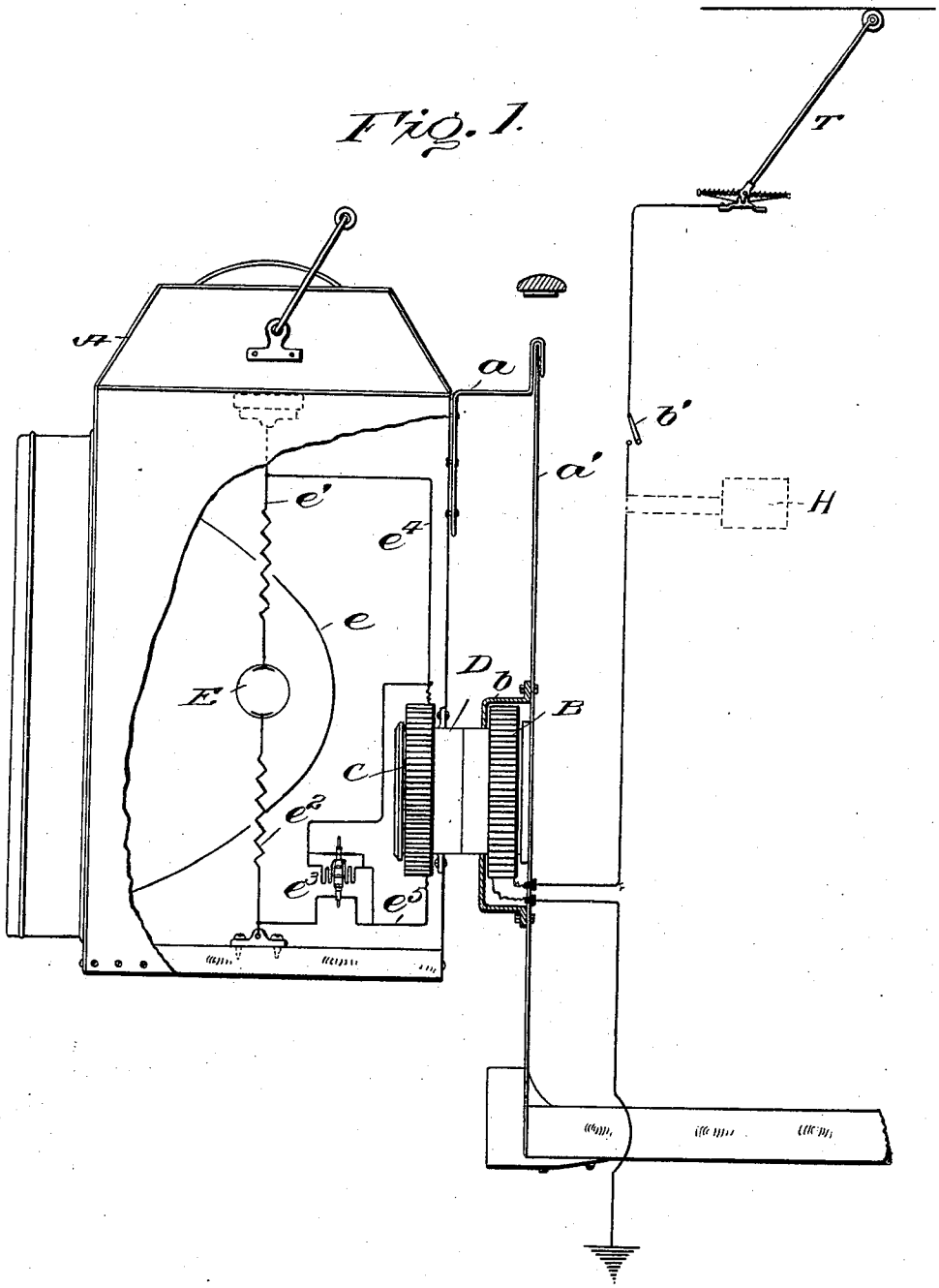
H. P. WELLMAN.

ELECTRIC HEADLIGHT LAMP.

(Application filed Apr. 6, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses

Inventor

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by

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(No Model.) 2 Sheets—Sheet 2.

Fig. 2

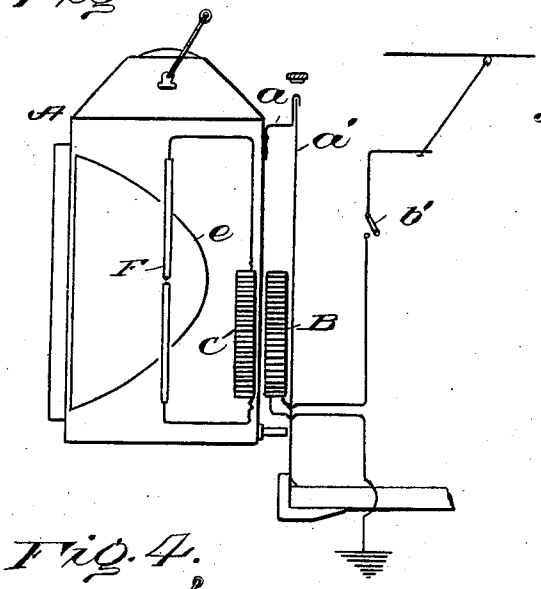


Fig. 3.

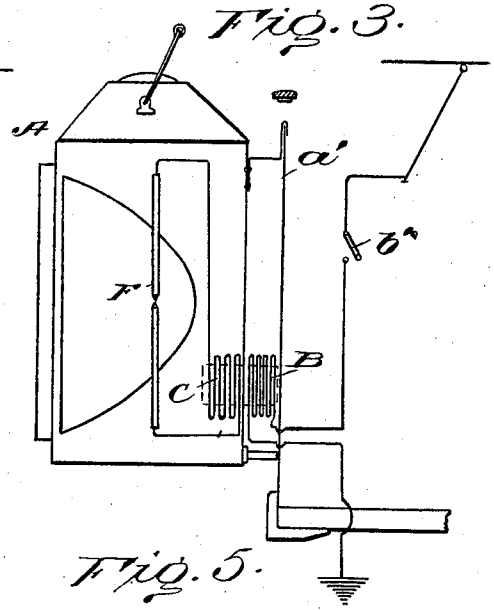


Fig. 4.

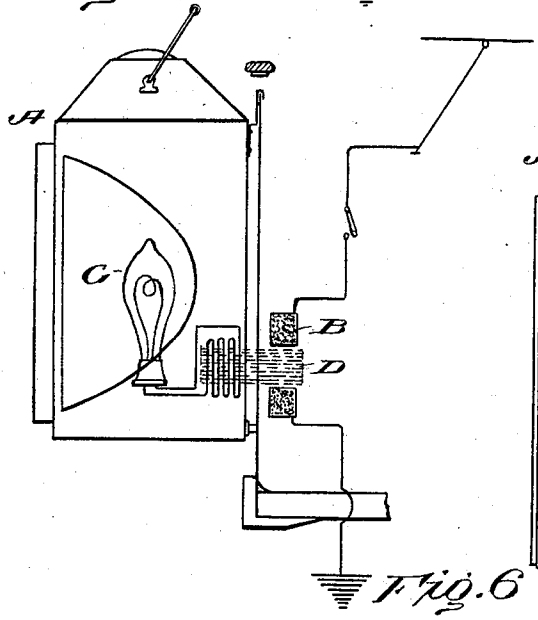


Fig. 5.

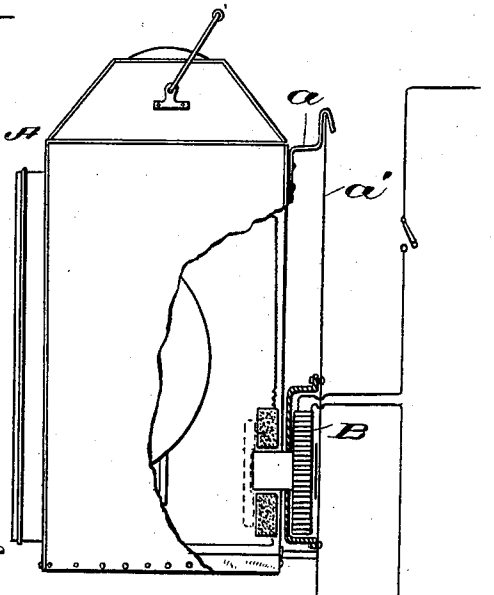
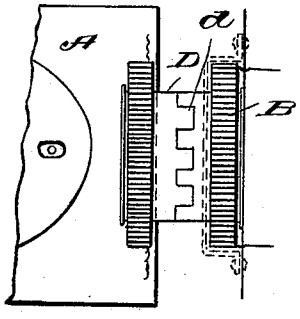


Fig. 6



Witnesses

Inventor

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UNITED STATES PATENT OFFICE.

HARLAN P. WELLMAN, OF ASHLAND, KENTUCKY.

ELECTRIC HEADLIGHT-LAMP.

SPECIFICATION forming part of Letters Patent No. 629,631, dated July 25, 1899.

Application filed April 6, 1899. Serial No. 712,006. (No model.)

To all whom it may concern:

Be it known that I, HARLAN P. WELLMAN, of Ashland, in the county of Boyd and State of Kentucky, have invented certain new and useful Improvements in Electric Headlight-Lamps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention contemplates certain new and useful improvements in electric headlight-lamps for electric-railway cars, being specially applicable to those operated by an alternating current.

The primary object of the invention is to provide a lamp which may be operated by and connected to the power-circuit of an electric-railway car without the annoyance and encumbrance of connecting wires and plugs as commonly employed.

A further object is to provide a lamp in which a highly-charged vacuum-tube located at or near the focal point of a reflector is the illuminating medium.

The embodiment of my invention contemplates the employment of primary and secondary coils similar to those of a transformer or converter, the coils being separable and so arranged that when the lamp is properly positioned an electromotive force or current will be generated in the secondary coil through the inductive effect of the alternating or interrupted current circulating through the primary coil. The latter is located on the car, preferably on the dash, while the secondary coil is carried by the lamp. In circuit with the secondary coil is a vacuum-tube, or in lieu thereof arc-carbons may be employed or an incandescent lamp.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view, partly in section and with parts broken away, showing my improved lamp. Figs. 2, 3, 4, and 5 are views showing various modifications. In Figs. 2 and 3 are clearly shown arc-carbons, and in Fig. 4 an incandescent lamp. Fig. 6 shows a form of connnection between the cores of the coils.

Referring to the drawings, A designates the lamp-casing, which is shown as supported by hangers a from the car-dash a'. The lamp may, however, be located at any desired point on a car-body, although commonly suspended from the dash.

B is a primary coil, which is located in a protective housing b, attached to the front of the dash a'. The terminals of this coil are connected, respectively, to the trolley T and ground-return. No resistance is employed. A switch b' is placed between the trolley and the primary coil.

C is the secondary coil, which is located within and carried by the lamp-casing A. This secondary coil must be so located with respect to the primary coil and the inductive cores D that the lines of inductive force circulating through the cores and the two coils will generate a suitable electromotive force or current in the secondary coil through the inductive effect of the alternating or interrupted current circulating through the primary coil. These primary and secondary coils and the connecting core or cores may be arranged in different ways, as indicated in the several figures of the drawings. In order to secure high efficiency in the inductive core of the lamp, the adjacent ends of the separable core may be formed with spaced-apart teeth d, so that they will interlock when placed together, as clearly shown in Fig. 6. When the lamp-casing A is removed from the car-dash, the connection between the two coils is broken.

A vacuum-tube E of spherical form is suspended or located at the focal point of a reflector e, the supporting-wires e' e^2 being secured to the top and bottom of the lamp-casing. Within the latter is located a rapidly-operating circuit-interrupter e^3, which is electrically connected to the secondary coil and vacuum-tube E through the wires e', e^2, e^4, and e^5.

In lieu of the vacuum-tube E arc-carbons F may be employed, as clearly shown in Figs. 2 and 3, (the circuit-interrupter being removed,) or an incandescent lamp G may be used, as shown in Fig. 4.

In practice a primary coil is located on each end of a car within its protective housing and

connected, as before stated, to the trolley and ground or return circuit. This permits the lamp to be used on either end of the car.

The operation is as follows: The motorman suspends the lamp in its accustomed place and then closes the switch b'. The alternating or interrupted current circulating through the primary coil generates a suitable electromotive force or current in the secondary coil, which in turn operates the circuit-interrupter e^3 and through the connecting-wires e' e^2 e^4 e^5 fully charges or excites the vacuum-tube, the light thereby generated being projected forward by the reflector e.

My improved headlight-lamp is equally applicable to the direct current by the use of a rapidly-operating circuit-interrupter, (indicated at H, Fig. 1 and connected in the electrical circuit between the trolley and the primary coil.) This circuit-interrupter will furnish an alternating or interrupted current to the primary coil, and thereby produce an electromotive force in the secondary coil for operating the lamp.

It will be understood that I do not restrict myself to the exact means herein shown and described and that changes may be made without departing from the scope of my invention.

I claim as my invention—

1. The combination with an electric-railway car having at its end a housing, and a primary coil located within and projected beyond such housing, of a headlight-lamp, and a secondary coil carried by such lamp and adapted to be placed in inductive relation to the primary coil when the lamp is placed in its operative position, the lamp-casing having an opening therein coincident with the secondary coil, as set forth.

2. The combination with an electric-railway car, having at its end a housing, and a primary coil located within and projecting beyond such housing, of a headlight-lamp, and a secondary coil located within the lamp-casing, and projecting through the wall of the latter, whereby the two coils are placed in inductive relation to each other when the lamp is in its operative position, as set forth.

3. The combination with an electric-railway car having at its end a housing, and a primary coil located within such housing and having its core projecting beyond the latter, of a headlight-lamp, a secondary coil located therein and having its core projecting outwardly through the lamp-casing, the meeting ends of the cores having interlocking teeth; substantially as set forth.

4. The combination with an electric-railway car having a housing, and a primary coil located within and projecting beyond such housing, of an electric headlight-lamp having a reflector, a secondary coil within such lamp having its core projecting beyond the lamp-casing, a vacuum-tube located in proximity to the focal point of the reflector, a rapidly-operating circuit-interrupter located in the lamp-casing, and electrical connections between the latter and said tube, as set forth.

5. The combination with an electric-railway car having a housing mounted on its dash, and a primary coil located within such housing and having its core projecting therefrom, of an electric headlight-lamp designed to be hung on such dash, and having an opening in its casing designed to aline with such primary coil, a secondary coil located within the lamp-casing in line with said opening so as to be placed in inductive relation to the primary coil when the lamp is positioned on the car-dash, as set forth.

6. The combination with an electric-railway car, of an inductive coil located at the end of the car, a protective housing therefor, a headlight-lamp, an inductive coil carried by such lamp, and adapted to be in inductive relation to said coil on the car, when the lamp is placed in operative position, inductive cores for such coils, a rapidly-operating circuit-interrupter in the lamp-casing, a vacuum-tube located at the focal point of a reflector, and connections between the inductive coil of the lamp, circuit-interrupter and vacuum-tube, as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

HARLAN P. WELLMAN.

Witnesses:
OSCAR HENTHORNE,
R. L. RICHARDSON.