

R. R. MACDONALD.  
HEADLIGHT.  
APPLICATION FILED JUNE 13, 1908.

959,770.

Patented May 31, 1910.

Fig. 1.

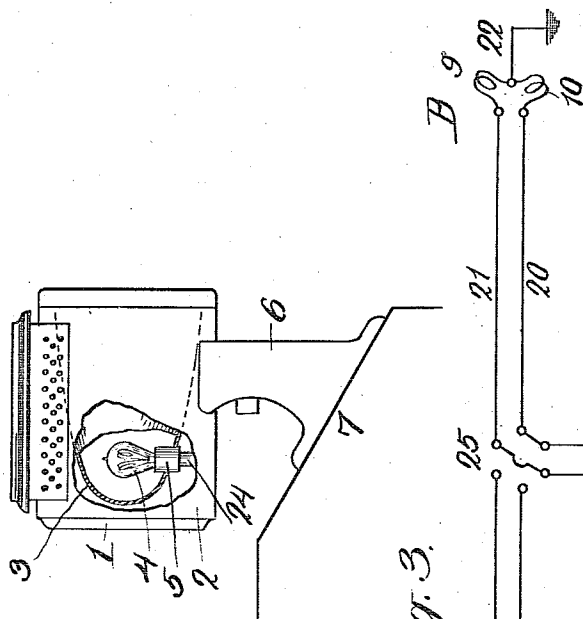
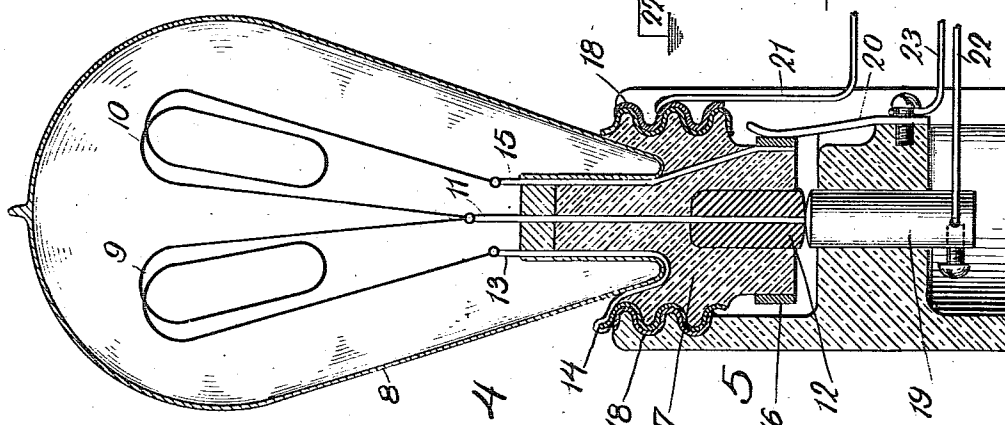
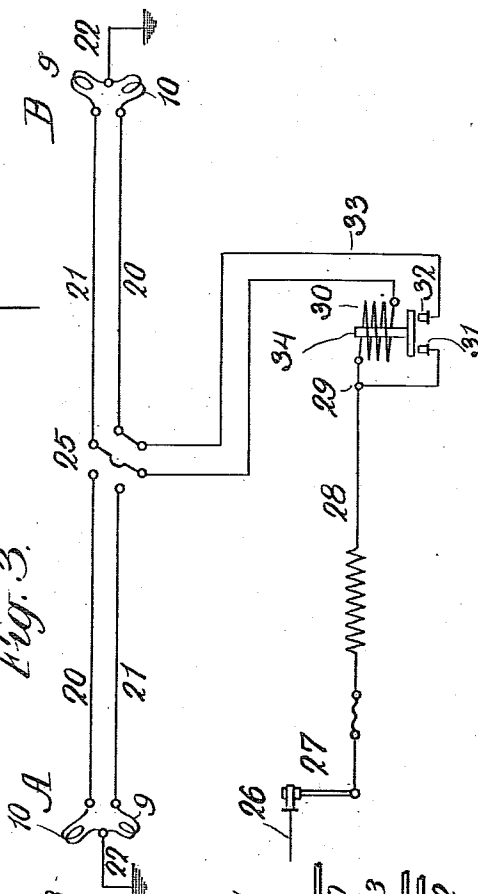


Fig. 3.



WITNESSES:

Ernest Miller  
C. M. Wals

Fig. 2.

INVENTOR

Rob Roy Macdonald.

BY

Chas. H. Hall  
ATTORNEY

# UNITED STATES PATENT OFFICE.

ROB ROY MACDONALD, OF WOODBURY, NEW JERSEY.

## HEADLIGHT.

959,770.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed June 13, 1908. Serial No. 438,271.

*To all whom it may concern:*

Be it known that I, ROB ROY MACDONALD, a citizen of the United States of America, and resident of Woodbury, county of Gloucester, State of New Jersey, have invented certain new and useful Improvements in Headlights, of which the following is a specification.

My invention relates to headlights for electric cars.

The object of my invention is to provide a headlight which shall be simple and effective in its construction and operation and in which a reserve filament is automatically brought into operation in case the primary or service filament burns out or breaks.

My invention consists in providing a reflector and case or housing of any approved construction with an incandescent lamp of novel construction in which there are two or more filaments; in providing a novel socket for the lamp in which there are terminals or contact members adapted to contact external contact members connected with the filaments, and in providing connections between the lamp and the ground and between the lamp and the source of current such that when the current is turned on to the lamp it will pass through the primary filament if said filament is intact, and such that if said primary filament should be broken or should become broken while in use the current will automatically be caused to traverse a second or reserve filament.

In the drawing accompanying and forming a part of this specification Figure 1 is a side view partially in section of a headlight embodying my invention, Fig. 2 is an enlarged view in section of the preferred form of lamp, and Fig. 3 is a diagram of the electric connections.

Numeral 1 represents the headlight proper. This is constructed of a case 2 of any approved form having the reflector 3 suitably supported therein and the lamp 4 detachably mounted in the socket 5 and located at substantially the focus of the reflector 3. The case 2 is secured to the base or bracket 6 which in turn is adapted to be fastened to the car 7, generally on the hood at the end of the car. The lamp 4 consists essentially of a glass bulb 8, two filaments 9 and 10, three external contact pieces 12, 14 and 16, and three connecting wires 11, 13 and 15 to connect the contact pieces with the filaments. The glass bulb is in the usual

form of an incandescent lamp bulb; the air is exhausted from it and it is hermetically sealed. The filaments may be made of any material suitable for incandescent lamp filaments. One of the ends of each of the filaments 9 and 10 is connected by the central conducting wire 11 to the central contact 12. The other end of the filament 9 is connected by the wire 13 to the contact 14 and the other end of the filament 10 is connected by the wire 15 to the contact 16. The contacts 12, 14 and 16 are held in place by non-conducting material 17, preferably some form of cement which can be molded into the proper form in a plastic condition. One of the contact members secured to the lamp, as 14, is in the form of a screw thread adapted to engage a corresponding thread formed in or upon a socket terminal 18. Another of the lamp contacts, as the contact 12, is adapted to be brought securely up against a socket terminal 19, and a third lamp contact, as 16, is adapted to engage a yielding socket terminal 20 before the contact 12 engages the socket terminal 19.

By means of this construction good electrical connection between all of the lamp contact members and their corresponding socket terminals is insured when the lamp is screwed into the socket as far as it will go. At the same time great accuracy is not required in the relative location of the lamp contact members or of the socket terminals. The body of the socket 5 is made of a non-conducting material and is adapted to be secured in any convenient way to the post 24 in the headlight. Only one of the filaments is used at a time, the other being held in reserve and automatically brought into use when the first or primary filament burns out or breaks. The means by which this is accomplished is shown diagrammatically in Fig. 3.

A and B represent the lamps of headlights located at either end of a car. Conducting wires 22 connect one of the ends of each of the filaments 9 and 10 with the ground, the other ends of the filaments being connected with terminals of a double pole double throw switch 25. A wire 26 is supplied with current from the trolley or third rail as the case may be. The wire 26 is connected by the switch 27 with the wire 28 which branches at 29, one branch leading through the magnet coil 30 to the double pole double throw switch 25 by which it is connected with the wire 21

and filament 9, and the other branch to the terminal 31. A terminal 32 is connected by the wire 33 through the double pole double throw switch 25 and wire 20 to the ungrounded end of the filament 10. An armature 34 is arranged in operative relation to the magnet coil 30 in such a way as to automatically open the connection between the terminals 31 and 32 when a current traverses the magnet coil 30 and to automatically close or make connection between said terminals when no current traverses the magnet coil.

From this it will be seen that when the double pole double throw switch 25 is turned so as to connect lamp B for instance and when the switch 27 is closed the energizing of the magnet coil will instantly operate the armature 34 to open the connection between the terminals 31 and 32 and the current will pass through the filament 9, which may be called the primary filament, and not through the reserve filament 10. And should the primary filament 9 become broken or burnt out while in use the cessation of the current in the magnet coil will instantly permit the armature 34 to close the connection between 31 and 32 and cause the current to pass through the filament 10. The armature 34 may be arranged to close the connection between the terminals 31 and 32 either by gravity or by a spring.

Having thus described my invention, what I claim is:

1. The combination with a pair of headlights for an electric car each containing a vacuum bulb equipped with a pair of filaments, of a ground connection connected

with one of the ends of each of said filaments, a double pole double throw switch having two pairs of its terminals connected respectively with the ungrounded terminals of said filaments, a conductor adapted to be connected with a source of current supply having two branches connected respectively with the remaining terminals of said double pole double throw switch, a magnet coil included in one of said branches and an armature operated by said magnet coil adapted to break said second branch when current is passing through said first named branch.

2. The combination with a pair of headlights for an electric car each equipped with a pair of filaments, of a ground connection connected with one of the ends of each of said filaments, a double pole double throw switch having two pairs of its terminals connected respectively with the ungrounded terminals of said filaments, a conductor adapted to be connected with the source of current supply having two branches connected respectively with the remaining terminals of said double pole double throw switch, a magnet coil included in one of said branches, and an armature operated by said magnet coil adapted to break said second branch when current is passing through said first named branch.

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

ROB ROY MACDONALD.

Witnesses:

H. H. BAUSER,  
ALEXANDER L. ROGERS.