March 22, 1949. L. GRIFFITHS ET AL 2,465,085

VEHICLE HEAD-LIGHTING SYSTEM

Filed May 15, 1948

Fig. 1.

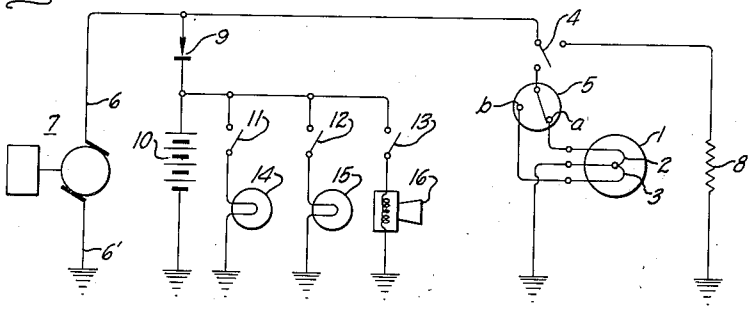


Fig. 2.

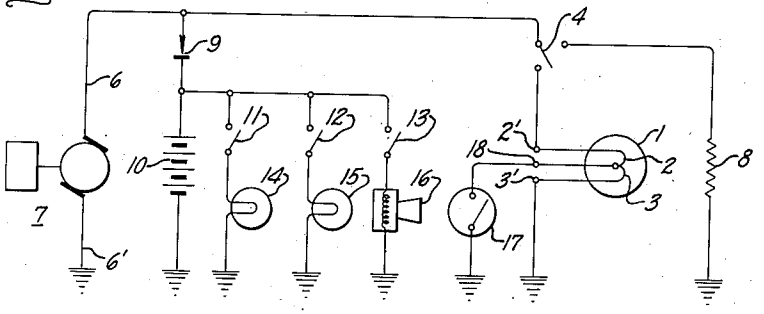
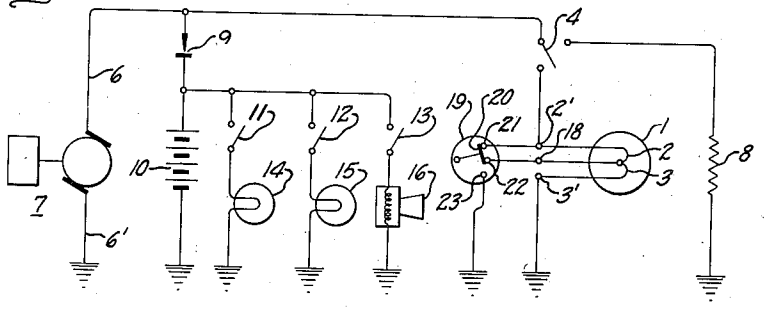


Fig. 3.



Inventor:
Leonard Griffiths,
George Edward Fardon,
by Vernet C. Kauffman
Their Attorney.

Patented Mar. 22, 1949

2,465,085

UNITED STATES PATENT OFFICE

2,465,085

VEHICLE HEADLIGHTING SYSTEM

Leonard Griffiths and George Edward Fardon, Coventry, England, assignors to General Electric Company, a corporation of New York

Application May 15, 1948, Serial No. 27,327
In Great Britain September 1, 1947

4 Claims. (Cl. 315—83)

1

This invention relates to lighting systems and is particularly adaptable to circuits for a head lamp of a motorcycle, small car or other vehicle supplied directly from a small alternating current generator.

In systems of this type it is common practice to provide the head lamp with two filaments, a main filament for giving a substantially level beam of light and a "dip" filament for giving a deflected beam of light. This type of lamp is generally supplied with current from an alternating current generator of the type providing a substantially constant current under fixed load conditions over a range of speed generally varying between 1000 to 5000 engine R. P. M. Under operating conditions of this type, when switching from the main filament to the dip filament of the headlight, and vice versa, an appreciable length of time elapses before the filament current builds up to normal value. This time lag is due to the initial low resistance of the cold filament and results in a momentary but appreciable blackout or diminution of the lamp illumination intensity. This objection cannot readily be overcome by modifying the design of the generator without impairing the constant current regulation characteristic.

An object of our invention is to provide new and improved lighting circuits for headlights of vehicles supplied from alternating current generators.

Another object of our invention is to provide new and improved circuits for dual filament headlights for motor vehicles supplied from constant current variable speed alternating current generators which will eliminate variations in illumination intensity when switching from one filament to the other.

A further object of our invention is to provide means for connecting the filaments of a dual filamentary lamp in series to an alternating current generator or source of supply for headlight illumination and for short-circuiting as distinct from open-circuiting the filament circuit of the lamp not required.

Further features and advantages of our invention will appear from the following description of species thereof. For a better understanding of our invention reference may be had to the following description taken in connection with the accompanying drawings and its scope will be pointed out in the appended claims.

In the drawing, Fig. 1 illustrates diagrammatically the usual switching arrangement provided for a double filament headlamp; Fig. 2 illustrates

2

diagrammatically a lighting system illustrating a switching arrangement for a double filament headlamp incorporating our invention; and Fig. 3 illustrates a modification of Fig. 2 incorporating our invention.

Referring to Fig. 1, we have there illustrated a prior art lighting circuit to more clearly illustrate our invention, and comprising a headlamp 1 containing a pair of filaments 2 and 3 in series with a control switch 4 and a dip or selector switch 5 across an output circuit 6, 6' of a substantially constant-current variable-speed alternating current generator 7. A resistance 8 may be connected across the output circuit 6, 6' of the generator 7 through the control switch 4 to maintain a constant load when the head lamp illumination is not required. A rectifier 9 is connected in series with a battery 10 across the output circuit 6, 6' of generator 7 to provide unidirectional current for charging and maintaining battery 10 at full operating capacity. Switches 11, 12 and 13 control the circuits of tail lamp 14, parking lamp 15, and horn 16 respectively.

When control switch 4 is closed to energize selector switch 5, either filament 2 or filament 3 is energized according to which of two positions *a* or *b* selector switch 5 occupies. To energize the opposite filament, selector switch 5 is moved to the alternate position, thus open-circuiting the first-mentioned filament. When changing selector switch 5 from position *a* to position *b*, or vice versa, an appreciable length of time elapses before the filament current builds up to its normal value. This time lag is due to the initial low resistance of the cold filament and results in a momentary but appreciable blackout or diminution of the lamp illumination intensity.

In accordance with one aspect of our invention, as indicated in Fig. 2, the filaments 2 and 3 of headlamp 1 are connected in series with each other and with control switch 4 in a current supply circuit across the output circuit 6, 6'. A pair of terminals 2' and 3' connect filaments 2 and 3 to the current supply circuit. Selector switch 5 of Fig. 1 is replaced with a make-and-break switch 17 which is connected to a center tap or common terminal connection 18 between filaments 2 and 3 and the ground connection of the output circuit 6, 6'. When switch 17 is closed, filament 3 which may, for example, be the main beam filament, is shunted or short-circuited and the dip filament 2 alone is illuminated. When switch 17 is reopened, both filaments 2 and 3 are again in series. By this means the blackout is eliminated by having at all times filament 2 in

the illumination circuit conducting current. When control switch 4 is opened, breaking the illumination circuit, a compensating resistance 8 is inserted in the generator-circuit to retain the constant load condition.

Fig. 3 illustrates another variation of our invention containing the same constituent parts as Fig. 1 except that selector switch 5 is replaced with a two-positioned selector switch 19 which comprises a contact member 20 which, when in the position indicated in Fig. 3 across contacts 21, 22 and with control switch 4 closed to energize lamp 1, short-circuits filament 2, thus retaining filament 3 in the energized circuit. When control member 20 is moved to its other operating position across contacts 22, 23, it short-circuits filament 3, thus permitting filament 2 to remain in the energized circuit. During the transition period both filaments are connected in series, thus eliminating the possibility of a momentary objectionable blackout.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. In combination with an electric lamp comprising at least two serially connected filaments, a source of alternating current of substantially constant magnitude connected across said lamp, and means for short-circuiting at least one of said filaments without interrupting the current flow in another filament during operation of said lamp.

2. In combination with an electric lamp for a motor vehicle comprising at least two serially connected filaments, a current supply circuit, a source of alternating current of substantially constant magnitude, a load resistance, a control switch for alternatively connecting said load resistance and said electric lamp in series with said current supply circuit, and means for short-circuiting at least one of said filaments without interrupting the current flow in another filament during operation of said device.

3. In combination with an electric lamp for a motor vehicle comprising a pair of serially connected filaments, a pair of terminals connected to the ends of said serially connected filaments, a common terminal connected between said serially connected filaments, a source of alternating current of substantially constant magnitude connected across said pair of terminals, and switching means connected to said common terminal for selectively short-circuiting one of said filaments.

4. In combination with an electric lamp for a motor vehicle comprising a pair of serially connected filaments, a pair of terminals connected to the ends of said serially connected filaments, a common terminal connected between said serially connected filaments, a source of alternating current of substantially constant magnitude connected across said pair of terminals, and a dual-position switching means comprising a contact member which is movable to selectively short-circuit said common terminal and either one of the pair of said other terminals.

LEONARD GRIFFITHS.
GEORGE EDWARD FARDON.

No references cited.