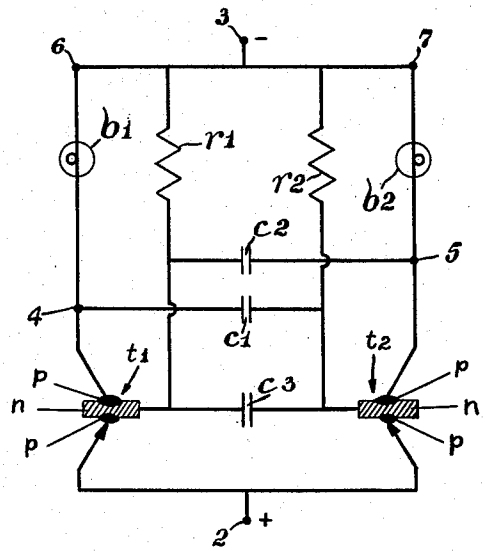
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CONTROL MEANS FOR FLASHING ELECTRIC SIGNAL LAMP SYSTEMS

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CONTROL MEANS FOR FLASHING ELECTRIC SIGNAL LAMP SYSTEMS

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1 Claim. (Cl. 315—209)

This invention relates to electric flashing lamp systems of the kind comprising a pair of lamps which are illuminated alternately, the object of the invention being to provide a means for enabling automatic control of the lamps to be effected in a simple and reliable manner.

A control means in accordance with the invention comprises a pair of transistors connected in parallel to one of a pair of current supply terminals and to a pair of lamp circuit terminals respectively, a pair of resistances connected in parallel between the other current supply terminal and the base contacts of the transistors, a pair of lamp circuit terminals connected to the second current supply terminal, a condenser connected between the lamp circuit terminal of one of the transistors and a point between the resistance and base contact of the other transistor, and a second condenser connected to the lamp circuit terminals of the said other transistor and a point between the resistance and base contact of the first transistor.

A typical example of a control means in accordance with the invention will now be described with reference to the accompanying diagram.

Referring to the diagram, the positive and negative current supply terminals are respectively indicated by 2, 3. To the terminal 2 are connected in parallel a pair of transistors *t*1, *t*2, of the p.n.p. type. The transistor *t*1 is also connected to a lamp circuit terminal 4 and the transistor *t*2 is connected to another lamp circuit terminal 5.

To the base contact of the transistor *t*1 and the negative current supply terminal 3 is connected a resistance *r*1. Similarly, a resistance *r*2 is connected to the base contact of the transistor *t*2 and the said terminal 3.

A condenser *c*1 is connected to the terminal 4 and a point between the resistance *r*2 and the base contact of the transistor *t*2. Likewise a condenser *c*2 is connected to the terminal 5 and a point between the resistance *r*1 and the base contact of the transistor *t*1.

Other lamp circuit terminals 6, 7 are connected to the negative current supply terminal 3.

The two signal lamps to be controlled by the above described means are indicated by *b*1 and *b*2. Lamp *b*1 is contained in a circuit which is attached at its ends to the terminals 4, 6, and lamp *b*2 is contained in a circuit which is connected at its ends to the terminals 5, 7.

The mode of action of the control means is as follows:

Assuming that lamp *b*1 is illuminated the condenser *c*1 receives a charge causing the base terminal of the transistor *t*2 to become increasingly negative. When this terminal becomes sufficiently negative the transistor *t*2 becomes conductive and the lamp *b*2 will be illuminated. Meanwhile the condenser *c*1 will be discharged through the resistance *r*2 and the lamp *b*1, and the transistor *t*1 becomes non-conductive. While the lamp *b*2 is in action the condenser *c*2 will become charged so causing the transistor *t*1 to again become conductive, these alternate actions being continued so long as the current supply is maintained. The periodicity of the alternate actions is determined by the time constants of the parts *c*1, *r*2 and *c*2, *r*1.

In the event of failure of either lamp the other lamp will remain continuously illuminated thus giving a warning that a failure has occurred.

To minimise any adverse effect on the normal action of the control means by transient impulses in the supply current, a third condenser *c*3 is combined with the control means and is connected between the base terminals of the transistors *t*1, *t*2 as shown in the diagram.

Instead of transistors of the type above mentioned, transistors of the n.p.n. type may be used in which case the polarity of the terminals 2, 3 is reversed.

Whilst the invention is applicable to flashing signal systems for a variety of purposes, it is intended more particularly for use on the instrument panels of aircraft where it is required to give a readily noticeable warning that an associated equipment is operating normally.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

In an electric flashing lamp system of the kind specified, the combination of first and second current supply terminals, a pair of lamp circuits connected in parallel to the first current supply terminal, and provided respectively at the ends remote from the first current supply terminal with a pair of additional terminals, a pair of transistors connected in parallel to the second current supply terminal, and respectively connected to the additional terminals, a pair of resistances connected in parallel with each other and with the lamp circuits to the first current supply terminal, and respectively connected to the base contacts of the transistors, a condenser connected between one of the additional terminals and the base contact of the transistor connected to the other additional terminal, a second condenser connected between the base contact of the other transistor and the last mentioned additional terminal, and a third condenser connected between the base contacts of the transistors.

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