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LIGHT CONTROL SWITCH

Original Filed May 3, 1918

FIG. I.

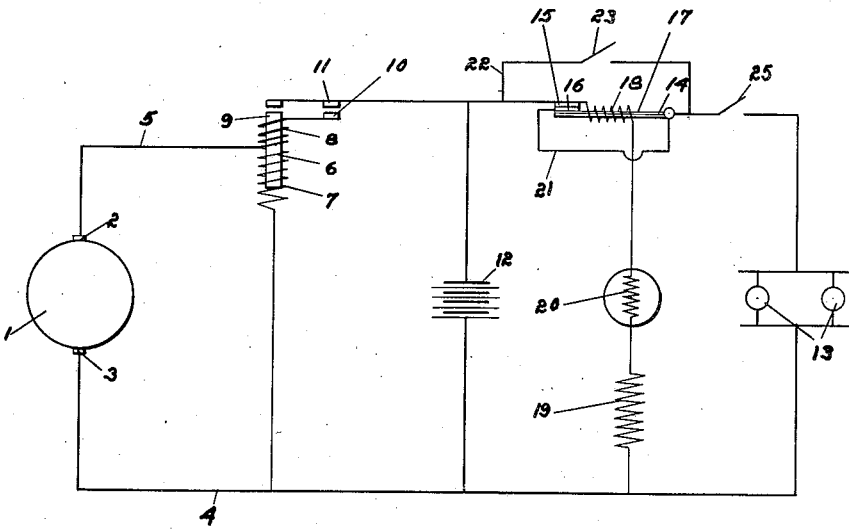
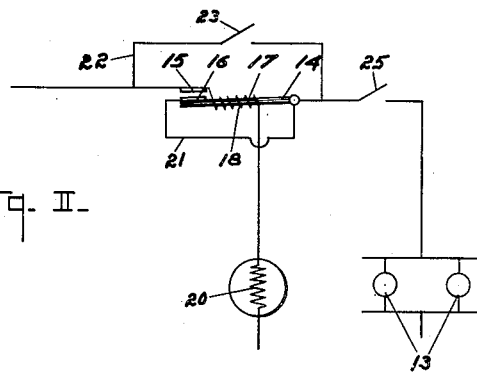


FIG. II.



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LIGHT-CONTROL SWITCH.

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This invention relates to control means for automatically cutting in and out, the current in lighting or power circuits dependent upon the presence of light.

5 The principal object of the invention is to provide means for automatically operating the switch in the circuit of the translating device.

10 Another object is to utilize a switch which is responsive to the intensity of light instant upon the switch.

15 Further objects, and objects relating to economies of manufacture and details of construction, will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices described in the following specification. My invention is clearly defined and pointed out in the appended claims.

20 An arrangement constituting a preferred embodiment of my invention is illustrated in the accompanying drawing, forming a part of this specification, in which:

25 Fig. I is a diagrammatic view illustrating the various parts of the system, and the connections thereto, as applied to a charging and lighting system for automobiles, and

30 Fig. II is a detail view, showing the switch in open position.

In the drawings, similar reference numerals refer to similar parts throughout the several views.

35 As illustrated, I have shown a dynamo electric machine 1 having main brushes 2 and 3, to which are connected the power mains 4 and 5. The relay or cut-out 6 is of a form commonly employed in lighting systems for automobiles, and consists in a shunt coil 7 and a series coil 8, which are adapted to energize a core 9 at a predetermined voltage, thereby closing the contacts 10 and 11 of the power main 5. Connected across the mains 4 and 5 is the storage battery 12, which is utilized for the purpose of supplying power when the generator is inactive. Translating devices 13 are also indicated in the form of lamps.

45 The generator 1 and the battery 12 are in parallel, so that either may supply current to the lamps 13 over the power mains. Interposed in the main 5 is a switch 14, which has contacts 15 and 16 and an operating arm 17. In the form shown, this arm 17 is made of two metallic strips having different ther-

mal co-efficients of expansion, and these strips are so positioned relative to each other, that when subjected to the same heating influence, the greater expansion of the one over that of the other will cause a warping of the arm 17, thereby opening the contacts 15 and 16.

60 For heating the arm 17, and thereby operating the switch, I utilize a heating coil 18 which is connected across the mains in parallel with the storage battery. In series with this heating coil, I employ a resistance element 19, and a light sensitive element 20. In the form, as at present employed, this light sensitive element consists in a strip of selenium metal which has the well known property of decreasing its resistance to the passage of electric current when subjected to the influence of light.

70 In order to prevent heating of the warping elements of the arm 17, the power main is shunted around this arm as indicated by the connection 21, the terminal of the connection being attached to the contact 16 of the switch. I also employ a second circuit 22 in parallel with the automatic switch 14, in which is a manual switch 23 which may be employed to cut out the automatic switch. A manually operated switch 25 is provided so that the circuit through the translating devices 13 may be opened if desired while the automatic switch 14 is closed.

80 In the practical utilization of my invention, as applied to automobiles, the light sensitive element 20 is so positioned as to be subject to changes in the intensity of sunlight. When there is an absence of all light, the switch 14 assumes its normal position as indicated in Fig. I, with the contacts 15 and 16 in closed position. With this switch closed, the current from the storage battery or from the generator has a free passage to the electric elements 13, which are accordingly illuminated. Some current, of course, passes through the heating coil 18, but inasmuch as the resistance of the light sensitive element 20 is very high the heating effect of the coil 18 is so small that operation of the automatic switch is prevented. However, as soon as the light waves impinge upon the light sensitive element 20, the resistance thereof is materially decreased with a resultant increase of the current passing through the heating coil. This causes an unequal expansion of the metal arms of the strips 17, which causes the contacts 15 and

16 to open, as illustrated in Figure II, thereby opening the electric circuit through the lamps 13.

From the above description, it is evident that I have provided means for automatically turning on the lights when the daylight diminishes, and turning off the lights when the daylight increases. This arrangement is particularly desirable where cars are left on city streets where civic regulations require that tail lights and headlights be burning after certain hours.

I am aware that the particular embodiment of my invention is susceptible of considerable variation without departing from the spirit of my invention, and, therefore, I desire to claim the same broadly, as well as specifically, as indicated by the appended claims.

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

1. In combination, a source of electricity; translating devices; connections between the electrical source and the translating devices; a switch in series with said connections; thermo-sensitive operating means for said switch; a heating coil on said thermo-sensitive operating means, connected in parallel with the translating devices; and a light sensitive unit in series with said heating coil, adapted to increase the current in said heating coil when the light sensitive unit is subjected to the influence of light.

2. In a light control system, the combination of a source of electricity; a plurality of

electrical translating devices, conductors intermediate the translating devices and source of electricity; a switch in series with said conductors; thermosensitive operating means for said switch; a heating coil on said thermosensitive operating means connected in parallel with the translating devices; and a light sensitive unit in series with said heating coil, adapted to vary the current in the heating coil with the intensity of illumination on the light sensitive unit; and a current carrying shunt around the thermosensitive portion of said switch.

3. In combination, a source of electricity; translating devices; a circuit between the electrical source and translating devices; a switch in series with said circuit; thermosensitive operating means for said switch; a heating coil in operative relationship with said thermo-sensitive operating means; and a light sensitive unit operatively connected with said heating coil adapted to increase the current therein when the light sensitive unit is subjected to the influence of light.

4. In combination, a source of electricity; translating devices connected to said source; circuit connections between the electrical source and the translating devices; thermosensitive means adapted to open said circuit; and a light sensitive unit in operative relationship with said thermosensitive means adapted to bring about energization of said means to open the circuit.

In testimony whereof, I affix my signature.

HENRY R. DAVIES.