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THERMALLY CONTROLLED ELECTRIC SWITCH

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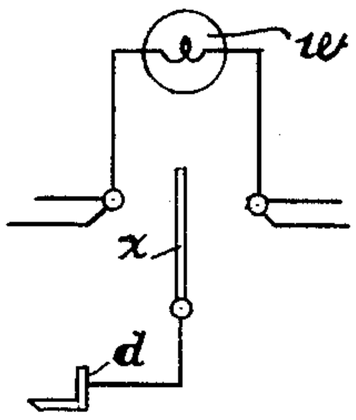

Fig.3.

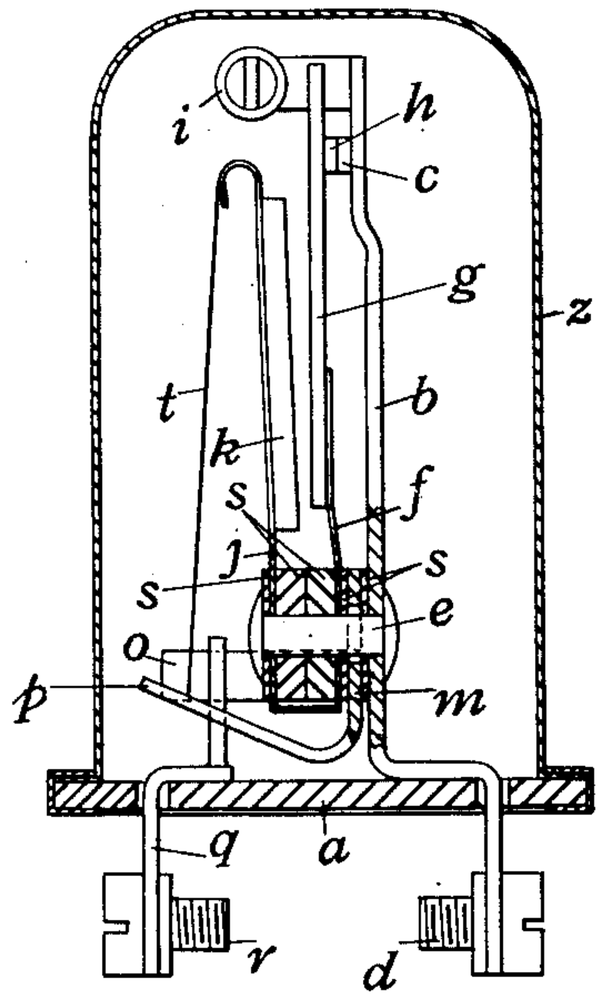

Fig.1

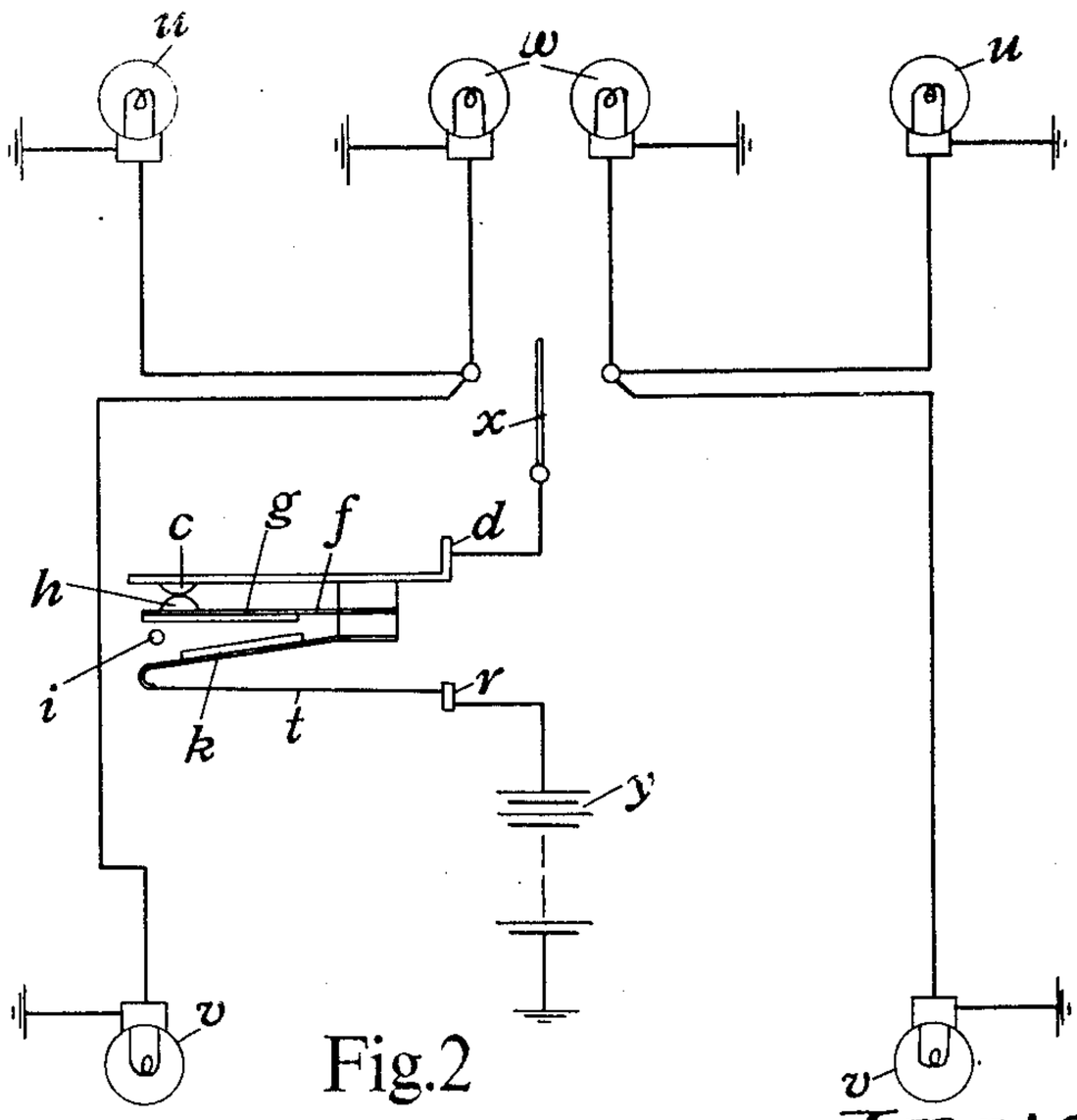

Fig.2

Inventor
A. D. Prickett
By Glascock Downing & Seibold
Attys.

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THERMALLY CONTROLLED ELECTRIC SWITCH

Alfred Donald Prickett, Handsworth, Birmingham, England, assignor to Joseph Lucas Limited, Birmingham, England

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2 Claims. (Cl. 200—113)

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This invention has for its object to provide a thermally controlled electric switch for enabling lamps on a road vehicle to give flashing signals when a change of direction is intended.

The invention comprises the combination of a spring-loaded movable member made wholly or partly of iron and carrying a contact which co-operates with a fixed contact, an adjacent spring-loaded member carrying or consisting of a permanent magnet adapted to actuate the first member in the direction for separating the contacts, a thermally extensible wire or like part controlling the second member, and a stop for limiting the movement of the first member.

In the accompanying drawings:

Figure 1 is a sectional side elevation of a switch embodying the invention.

Figure 2 is a diagram illustrating an application of the invention to a direction-indicator system.

Figure 3 is a diagram illustrating a modified detail.

Referring to Figure 1, there is secured to an insulating base *a*, a rigid metal member *b* carrying a fixed contact *c* and having at one end a circuit terminal *d*. By means of a rivet *e* there is secured to the member *b* a spring blade *f* which at one end is secured to an iron piece *g* carrying the movable contact *h*. The extent of separation of the contacts is limited by an insulating stop *i* extending from one end of the member *b*. The spring blade *f* is bent to a U-form, and on its part *j* is secured a permanent magnet *k* which is situated adjacent to the iron piece *g*. Alternatively the member *j* may consist of a separate spring blade electrically connected to the blade *f*. Further there is secured to the member *b* by the rivet *e* a metal piece *m* on which are formed two tongue pieces, *o*, *p*. The tongue piece *o* is connected to a metal part *q* carried by the base *a*, and provided with a circuit terminal *r*. The various parts secured to the member *b* by the rivet *e* are suitably insulated from each other by intermediate washers as *s* made from electrically insulating material. The tongue piece *p* is connected to the free end of the part *j* by a metal wire *t* or thin ribbon which is extensible by the heating action of an adequate current passing through it. The switch is enclosed by a cover *z* attached to the base *a*.

The switch above described is intended to be connected in a direction-indicator system comprising lamp circuits which are arranged in the manner shown in Figure 2. The system shown in Figure 2 comprises right and left hand rear signal lamps *u*, right and left hand front signal lamps *v*, and warning lamps *w* (or a single warning lamp *w* as shown in Figure 3) mounted in a position visible to the driver. The lamp circuits are controlled by a manually operable switch *x*, and current is supplied to the lamps by a battery *y*, the thermally controlled switch being arranged in series with the battery and the switch *x*.

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When the driver moves the switch *x* to the right or left to bring the desired signal lamps into action, the current passing to the lamps heats the wire *t* and the consequent extension of the wire allows the blade *j* and magnet *k* to move towards the iron piece *g*, and when the magnet approaches the piece *g* it exerts a pull on the latter causing the contacts *c*, *h* to be separated suddenly, thereby interrupting the supply of current to the lamps. This interruption of the current also results in interruption of the current through the wire *t*. The latter thereupon cools, and its consequent contraction causes the magnet to be returned to its initial position, thereby allowing the contact pieces to re-close and re-establish the current through the lamps. The intermittent opening and closing of the switch causes the lamps to give the desired flashing signals, and the signals continue so long as the switch *x* remains closed. At the same time the flashing of the lamp *w* then in action announces to the driver that the lamps *u*, *v* are working properly. But in the event of failure of either or both of the lamps *u*, *v*, the current then flowing through the wire *t* will be inadequate to effect the required heating of the wire. The switch controlled by the wire will therefore remain closed, and the steady light then given by the warning lamp will announce the existence of a fault to the driver.

By this invention, a thermally controlled switch for the purpose above described can be provided in a simple and reliable form.

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

1. A thermally controlled electric switch for giving flashing signals comprising, in combination, a spring loaded movable member including an iron part, a contact carried by said movable member, a fixed contact to which said first contact is normally held by the spring loading of the movable member, a spring loaded member including a permanent magnet arranged adjacent the movable member and adapted to actuate the latter in a direction to separate the contacts, a thermally extensible wire-like element connected

to said second spring loaded member to hold the latter in spaced relation to said first member, and a stop for limiting movement of said first member, the wire-like element being included in an electric circuit with the fixed and movable contacts and the arrangement being such that current flowing through the wire-like member causes expansion thereof to permit the permanent magnet to move near enough to the iron member to effect separation of the contacts which are thereby intermittently opened and closed.

2. A switch according to claim 1, in which the fixed contact is carried by a rigid member secured to a base and the iron part is carried by a spring blade and is provided with a contact, and

the permanent magnet is carried by a second spring blade integral with the first said spring blade.

ALFRED DONALD PRICKETT.

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