

Aug. 5, 1924.

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A. H. MIDGLEY

SWITCH OR SWITCHBOARD FOR CONTROLLING ELECTRIC CIRCUITS

Filed April 3 1922

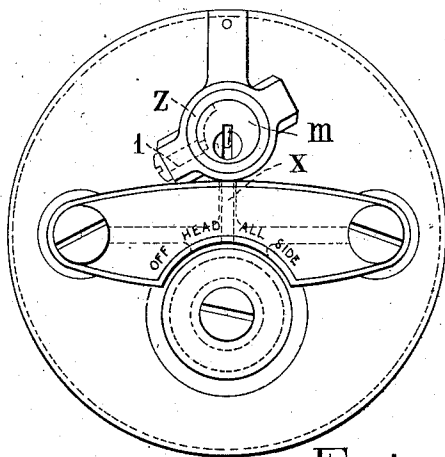


Fig. 1.

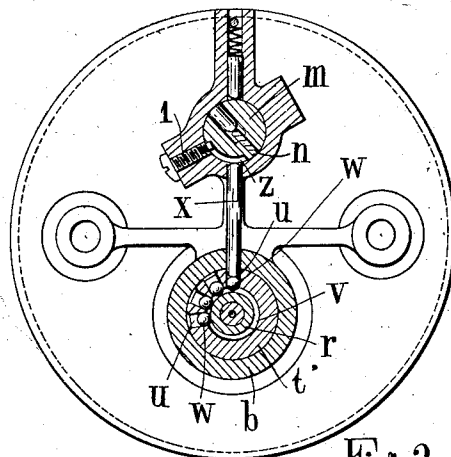


Fig. 2.

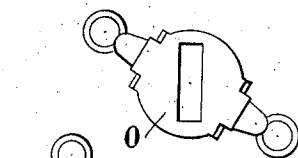


Fig. 4.

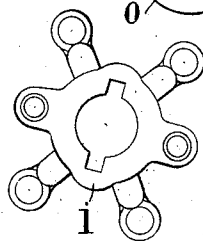


Fig. 5.

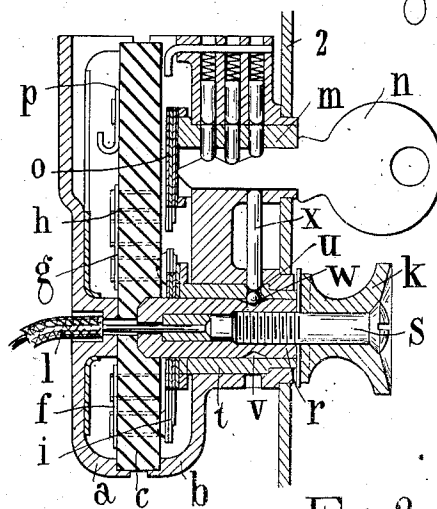


Fig. 3.

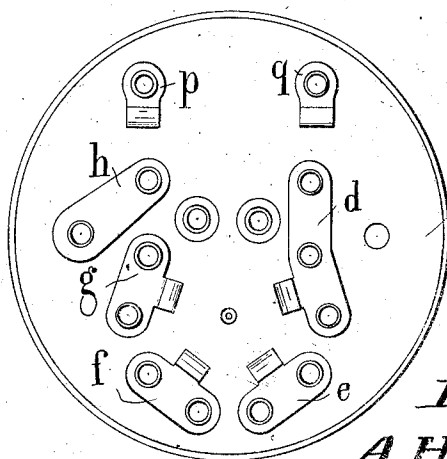


Fig. 6.

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UNITED STATES PATENT OFFICE.

ALBERT HENRY MIDGLEY, OF UXBRIDGE, ENGLAND, ASSIGNOR TO MIDGLEY CAR LIGHTING COMPANY, LIMITED, OF LONDON, ENGLAND.

SWITCH OR SWITCHBOARD FOR CONTROLLING ELECTRIC CIRCUITS.

Application filed April 3, 1922. Serial No. 549,331.

To all whom it may concern:

Be it known that I, ALBERT HENRY MIDGLEY, a subject of the King of Great Britain and Ireland, and residing at Fairfield, Harefield Road, Uxbridge, in the county of Middlesex, England, have invented certain new and useful Improvements in Switches or Switchboards for Controlling Electric Circuits, of which the following is a specification.

This invention relates to switches or switchboards for controlling a plurality of electric circuits such, for example, as the switchboards for controlling the starting, lighting, and ignition circuits on motor vehicles.

The object of the present invention is to simplify and cheapen the construction of such devices and to provide for their reduction to a comparatively small compass in order that they may be easily and rapidly installed in position and will present a neat external appearance when so mounted.

The invention consists in a switchboard for controlling a plurality of electric circuits having a single switch adapted to control more than one of said circuits, independently.

The invention also consists in a switchboard of the above character having means for locking the switch against operation when it is desired that the circuits shall not be under control.

The invention further consists in a switchboard of the above character in which the key for operating the lock will also control an electric circuit additional to those controlled by the switch.

The accompanying drawings illustrate one convenient form of switchboard in accordance with the invention.

Figure 1 is a front elevation of the switchboard.

Figure 2 is a front elevation partly in section.

Figure 3 is a side sectional elevation.

Figures 4 and 5 are views illustrating two switches shown in Figure 3.

Figure 6 is a view showing the arrangement of contacts in association with such switches.

In carrying my invention into effect in one convenient manner, as for example, in its application to the ignition, lighting and starting circuits adopted on motor vehicles

I form my improved switchboard with an outer casing or cover which may be formed in two or more parts *a b*, and within which I arrange a contact carrying plate *c* of suitable insulation which may be of any desired dimensions depending upon the character of the switchboard required.

Upon the insulating plate I arrange the necessary contacts for the battery and various lamps comprised in the lighting set as denoted respectively in Figure 6 by the reference letters *d e f g* and also an earth connection *h*, and in conjunction with such contacts I arrange a contact bridge *i* (Figure 5) which is adapted to be rotated so that any or all of such contacts may be made or broken according as any, all, or none of the lamps require to be lighted. The rotation of the contact bridge *i* is effected by a switch or handle *k* which is so constructed and arranged that in addition to the motion of rotation for controlling the lighting circuit it is also capable of an axial or rectilinear movement for operating the starting switch or other means employed for starting the motor either directly or through the intervention of a Bowden wire *l* or other flexible connection, or by suitable rods, links, or other means.

In conjunction with such switch or handle *k* I provide a lock *m* of the rotary barrel or cylinder type adapted to be actuated by a key *n* and to control means which will effectually lock the switch *k* against both rotation and axial or rectilinear movement.

The barrel or cylinder of the rotary lock *m* itself carries or is adapted to actuate a contact bridge *o* (Figure 4) which may take either one of two positions in order to control the magneto or other ignition circuit (represented by the contacts *p q*—Figure 6) so that while the switch *k* controls the starting and lighting circuits the key *n* will control the ignition circuit.

The construction and arrangement of switch and locking means are preferably such that the switch may be locked in any of its angular positions controlling the lighting circuit while at the same time the ignition and starter circuits may be locked in the "off" position.

In the specific construction illustrated the controlling switch *k* embodies a central member *r* to which the switch knob is secured by means of a screw *s* or otherwise and which

may be moved axially for the purpose of operating the starting switch (or the starting brush in the case where one of the motor brushes is employed as the starting switch) while such central member is surrounded by a tube or sleeve *t* which carries the contact bridge *i* and which may be caused to engage with the knob or handle by means of grooves or recesses engaging projections or pins upon the handle or by any other suitable means which while permitting of the withdrawal of the handle for operating the starting switch will yet transmit rotation of the handle to the sleeve *t* for the purpose of rotating the contact bridge *i* in a manner to control the lighting circuit.

The tube or sleeve *t* is provided with a series of apertures or recesses *u* adapted to cooperate with a V-shaped or like recess *v* in the member *r*, the apertures *u* being arranged peripherally in positions corresponding to the various angular positions which the lighting switch may be required to occupy, and in each of such recesses is a ball *w* which also in part projects into the recess *v*. Between the member *t* and the lock *m* is a pin or bolt *x* which when the locking device is in its locked position as shown in Figures 1 and 3 is caused to protrude into one of the radial recesses so that both rotary and axial movement of the switch *k* is prevented with the result that the switch is locked against operation. When, however, the lock is released as shown in Figure 2 a recess *z* in the barrel of the lock registers with the locking pin or bolt *x* thus permitting the latter to be raised from engagement with the switch member by means of one or other of the balls referred to consequent upon axial or rotational movement of the switch so that in such position of the lock the switch may be freely operated and owing to the fact that there is a plurality of recesses corresponding to the various angular positions of the lighting switch the latter may be turned to any one of such positions and then locked therein by the locking means while at the same time the starting and ignition circuits will also be locked against operation, it being understood that the contact bridge *o* actuated by the lock is so arranged in relation to the contacts that the ignition circuit is off when the locking device is in its locked position.

A suitable stop 1 may be provided in conjunction with the lock for limiting the rotational movement of the same in order to ensure the correct positioning of the ignition contacts, and if necessary or desirable a similar stop or stops may be provided in conjunction with the starting and lighting switch, these arrangements ensuring that the devices themselves will be arrested with the result that no pressure may be exerted upon the contacts such as might be the case were

these themselves to carry the stopping or arresting devices.

It will be understood that the invention is capable of general application in any case where a plurality of electric circuits are to be controlled so that the invention is not to be confined to the application which is hereinafter given by way of example, while at the same time I may modify the manner of providing for the dual movement of the controlling switch and the construction and arrangement of locking means adopted as may be found most suited to any particular practical requirements which the invention may be called on to fulfill.

Moreover when applying the invention to the switchboard of a motor vehicle, for example, the construction and arrangement adopted is so compact in its compass and the only parts which need to be operated are the key and the knob of the controlling switch so that the whole contrivance within its outer casing or cover may be mounted behind the dashboard 2 (Figure 3) leaving only the key aperture and the switch knob visible together, if necessary or desirable, with a suitable indicator shown in Figure 1 for indicating the lamps controlled by the lighting switch in each of its various angular positions.

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

1. A switchboard for controlling the starting, lighting and ignition circuits on motor vehicles, comprising a switch member adapted for both rotary and axial movements for controlling two of said circuits, and a locking member for locking said switch against both movements, and adapted to control the third circuit.

2. A switchboard for controlling the starting, lighting and ignition circuits on motor vehicles comprising a switch member adapted for both rotary and axial movements for controlling two of said circuits, a locking member for locking said switch against both movements, and adapted to control the third circuit, and a pin operated by said lock for locking said switch member.

3. A switchboard for controlling the starting, lighting and ignition circuits on motor vehicles, comprising a rotary contact member for controlling the lighting circuit, an axially movable member for controlling the starting circuit a single operative member for actuating both circuit controlling means, and a locking member for locking the operative member against both movements and adapted to control the third circuit.

4. A switchboard for controlling the starting, lighting and ignition circuits on motor vehicles comprising a rotary contact

member for controlling one circuit, an axially movable member for controlling the second circuit, a single operative member for actuating both circuit controlling means and a locking member adapted to control the third circuit and to lock the controlling means for the other two circuits.

5. A switchboard for controlling the starting, lighting and ignition circuits on motor vehicles comprising in combination a rotary contact member for controlling one circuit, a rotary member operating said contact member, an axially movable member for controlling a second circuit, a single operative member for controlling both rotary and axially movable members and a locking member for controlling the third circuit and adapted to lock both rotary and axially movable members against movement.

6. A switchboard for controlling the starting, lighting and ignition circuits on motor vehicles comprising a rotary member for controlling one circuit, an axially movable member for controlling the second circuit, a single operative member for actuating both rotary and axially movable members, a locking member for controlling the third circuit and a pin actuated by said locking member for locking both rotary and axially movable members against movement.

7. A switchboard for controlling the starting, lighting and ignition circuits on motor vehicles comprising a rotary contact

member controlling one circuit, a rotary member having angularly spaced openings therein for actuating said rotary member, an axially movable member for controlling a second circuit having a peripheral groove therein, a single operative member for actuating both rotary and axially movable members, a ball located in each of said angular spaced openings, a locking member adapted to control the third circuit and a pin actuated by said locking member and co-operating with said openings and said balls for locking both rotary and axially movable members against movement.

8. A switchboard for controlling the starting, lighting and ignition circuits on motor vehicles, comprising an axially movable member for controlling one circuit, a sleeve member for actuating said axially movable member and having a peripheral groove therein, a second sleeve member surrounding said first sleeve member, a rotary contact member connected with said second sleeve member, a single device for axially moving the first sleeve member and for rotating the second sleeve member, a locking member controlling the third circuit and means actuated by said lock for locking both axially movable and rotary sleeve members against movement.

In testimony whereof I have signed my name to this specification.

ALBERT HENRY MIDGLEY.