Sept. 14, 1926. 1,599,875

W. A. CHRYST

SWITCH

Filed April 20, 1922 2 Sheets-Sheet 1

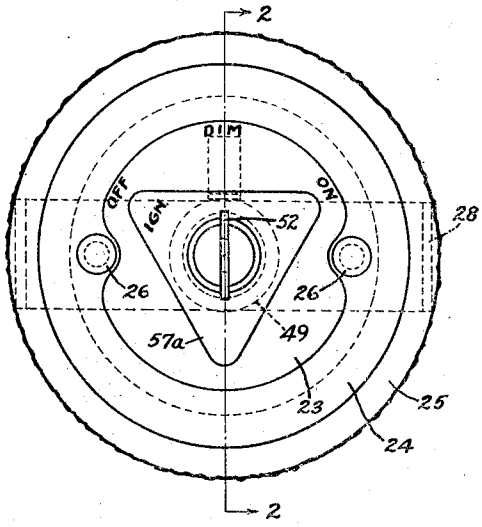


Fig. 1

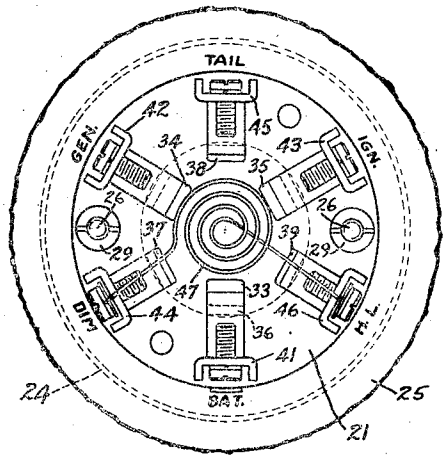


Fig. 3

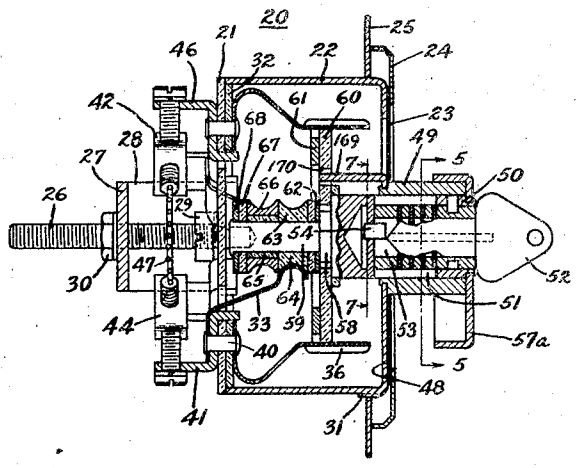


Fig. 2

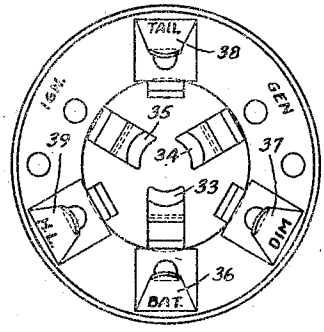


Fig. 4

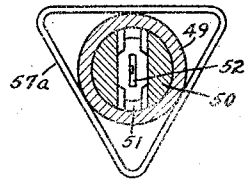


Fig. 5

Witnesses
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SWITCH

Filed April 20, 1922 2 Sheets-Sheet 2

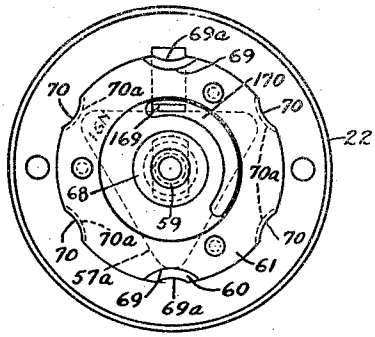


Fig. 6

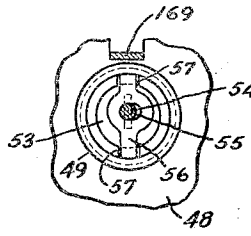


Fig. 7

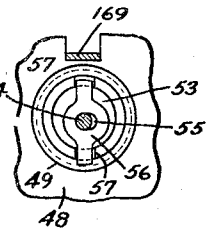


Fig. 8

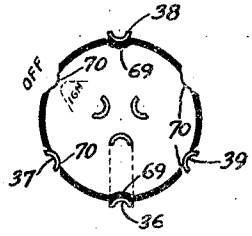


Fig. 9

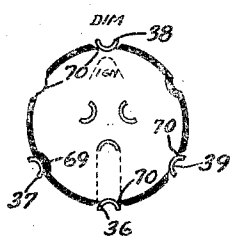


Fig. 10

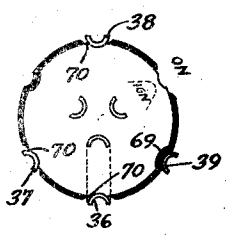


Fig. 11

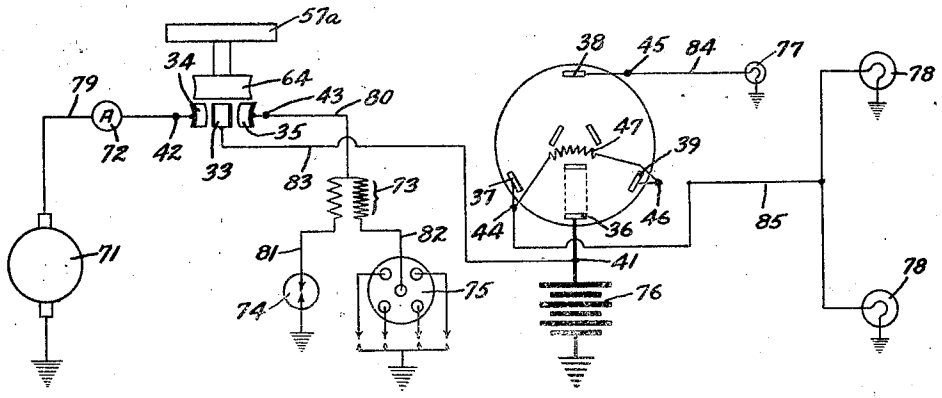


Fig. 12

Witnesses
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Patented Sept. 14, 1926. 1,599,875

UNITED STATES PATENT OFFICE.

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SWITCH.

Application filed April 20, 1922. Serial No. 555,665.

This invention relates to lighting and ignition switches for automobiles, and its principal objects are to provide a simple means for controlling a plurality of electrical circuits and, more especially, to provide a single switch controlling member movable to separately control the lighting circuits and the ignition circuit.

In the accompanying drawings:

Fig. 1 is a front view of a switch embodying the present invention, in position on an instrument board;

Fig. 2 is a longitudinal sectional view thereof;

Fig. 3 is a rear view of the switch box showing the binding posts and support therefor;

Fig. 4 is a front view of the contacts and contact support;

Fig. 5 is a transverse sectional view of the switch lock, taken substantially on the line 5—5 of Fig. 2;

Fig. 6 is a rear view of the switch cover and contact bridging member carried thereby;

Fig. 7 is a transverse sectional view taken on the line 7—7 of Fig. 2, of the switch lock with the lock in its open position;

Fig. 8 is a view similar to Fig. 7, the lock being shown in its closed position;

Figs. 9, 10 and 11 illustrate different positions of the contact bridging member controlling the lights, as viewed from the front of the switch; and

Fig. 12 is a wiring diagram of an ignition and lighting system having a switch embodying the present invention.

In these drawings, 20 is the switch box having a base plate 21 of insulating material, a cover 22, and a face plate 23. 24 is a disc bearing against the face plate 23 and the instrument board 25 on which the switch box is mounted. Bolts 26 pass through the disc 24, face plate 23, switch base 21 and the web 27 of a U-shaped clamp 28 whose ends bear against the inner face of the instrument board. The bolts locate the face plate and switch base relative to the switch cover. Nuts 29 threaded on the bolts into engagement with the base plate secure the cover, face plate and disc together. Nuts 30 on the bolts 26 press the clamp 27 and disc 24 against opposite sides of the instrument board, the annular position of the switch box on the board being fixed by a lug 31 on the cover 22 which lug seats in a notch in the switch board.

Base plate 21 supports an insulating disc 32, an inner series of three spring contacts 33, 34, and 35 whose inner ends are reversed and are spaced a small distance apart, and an outer series of four spring contacts 36, 37, 38, and 39, whose inner ends are spaced farther apart than the first series. The two series of spring contacts project from the base plate into the switch box, the larger series being located in a transverse plane farther from the base plate than the transverse plane of the three contacts. Rivets 40 secure the spring contacts to the base plate and to the binding posts 41, 42, 43, 44, 45 and 46, projecting from the rear face of the base plate. The binding posts are connected to the contacts in the order given (see Figs. 3, 4 and particularly Fig. 12) except that contacts 33 and 36 are connected electrically by the rivet 40 to one post 41. Resistance wire 47 connects binding posts 44 and 46.

Projecting through a hole in the front wall 48 of the switch box is an ignition switch lock having a fixed casing 49 supported by the switch box cover 22, a switch operating member 50 movable longitudinally and angularly in the switch box and having a recess 51 in which are located the key 52 and parts cooperating therewith including a rod 53 adapted to be rotated by the key. 54 is a pin pressed into a hole in the rear end of the rod 53 in a position eccentric to the axis of the rod. Pin 54 passes through a hole 55 in a transversely disposed locking arm 56 whose ends project into recesses 57 in the switch operating member 50. When the ignition is unlocked the locking arm 56 is held in the position shown in Figs. 2 and 7 in which position the members 50 and 56 may be moved axially in the lock casing 49. Turning the key rotates rod 53 and moves the lower end of the arm 56 downwardly over the inner end of the lock housing preventing axial movement of the switch controlling member 50. This lock is operable to lock or release the ignition switch in any setting for lights.

57[a] is a switch operating handle mounted on the front end of member 50 and shown herein as triangular in shape and having one arm marked IGN. This arm serves as an indicator to show the angular position of the control member 50 to the switch and the

face plate 23 which is marked Off, Dim, and On (Fig. 1).

The switch operating member 50 has reduced portions 58 and 59. Fixedly mounted on the portion 58 is an insulating disc 60 carrying on its rear face contact bridging plate 61. Mounted on the smaller portion 59 of the member 50 are a metal disc 62, a thin insulating disc 63, a wider circumferentially grooved insulating disc 64, a nonconducting sleeve 65 carrying a relatively wide, circumferentially grooved metal disc 66, nonconducting washer 67 and a metal washer 68. These parts are secured to the operating member so that they are moved axially and angularly therewith by pressing them against shoulders formed on the member 50 and upsetting the inner end of this member against the metal washer 68.

Insulating disc 60 and contact bridging plate 61 are formed of substantially the same diameter (Figs. 2, 6, 9, 10 and 11) and with aligned notches 69, 69^a and 70, 70^a in which the contacts 36 to 39 inclusive seat. The notches 69 in the contact bridging plate 61 are deeper than the corresponding notches 69^a in the insulating disc 60 so that a contact seating in the notch in disc 60 will be separated from the contact plate. Notches 70 in the contact bridging plate are not as deep as the corresponding notches 70^a in the insulating plate to insure engagement between the metal plate 61 and a resilient contact arm seating in the notch 70. A pin 169 struck up from the front plate 48 of the switch box projects into an arcuate slot 170 in the disc 60 and limits the angular movement of the disc and contact arm carried thereby (Figs. 2 and 6).

Referring to the wiring diagram shown in Fig. 12, 71 is a generator, 72 an ammeter, 73 an ignition coil, 74 a timer, 75 a distributor, 76 a battery, 77 the tail light and 78 the head lights. These parts are connected by wires 79 to 85 inclusive. The ignition switch completes the ignition circuit in the following manner: Contacts 33, 34 and 35 are bridged by the metal sleeve 66 (not shown in Fig. 12); contact 34 is connected with contact post 42, ammeter 72, wire 79 and generator 71 to ground; contact 33 is connected to wire 83, binding post 41, and through battery 76 to ground; and contact 35 is connected to binding post 43, wire 80, primary winding of coil 73 and timer 74 to ground, the secondary winding of coil 73 being connected by wire 82 to distributor 75 and to ground.

The contacts of the lighting system are connected as follows: Contact 37 is connected to binding post 44, lead 85 and through head lights 78 to ground; contact 39 is connected to binding post 46, resistance 47, binding post 44 and lead 85 to the head lights; and contact 38 is connected to binding post 45, lead 84, tail light 77 and to ground.

To operate the switch to control the lights the switch handle 57^a is turned from its Off position (Fig. 9) until the mark IGN on the handle is opposite the mark Dim on the face plate (Fig. 10) bringing the plate 61 into engagement with contacts 36, 38 and 39 to dimly light the head lights and light the tail light, or until the arm marked IGN is opposite the mark On on the face plate (Fig. 11) to bridge contacts 36, 37 and 38 and brightly light the head lights and light the tail lights. In the first position the insulating plate 60 separates the battery contact 36 from the contact bridging plate 61, in the second position it separates the contact 37 from the plate 61 and in the last position the insulating plate 60 separates the contact 39 from the bridging plate. Owing to the fact that the faces of the contacts in the lighting circuits are relatively long the operation of the switch to control the lights may be effected independent of the position of the switch to control ignition, the locking arm operated by the key permitting a free angular movement of the handle 57^a when the ignition is locked. The ignition is controlled by moving the handle out or in, in any position for controlling the lights.

What I claim is as follows:

1. An electric switch comprising, in combination, a plurality of stationary contacts, movable contacts cooperating respectively with said stationary contacts, a member for producing both sidewise and rotary movement of said movable contacts, and means for locking said movable member against axial movement while permitting said member to rotate said contacts.

2. An electric switch comprising: a movable member having a rotary movement and an independent sliding movement, electric switch contacts opened or closed by said rotary movement, second electric switch contacts opened or closed by said sliding movement, and a locking means for locking said movable member against said sliding movement while permitting the rotary movement thereof.

3. In an electric switch, in combination, a manually operated movable member having independent rotary and sliding movements, electric switch contacts opened or closed only by said rotary movement, second electric switch contacts opened or closed only by said sliding movement, and a rotary cylinder lock embodied in said movable member for locking said movable member against only one of said movements.

In testimony whereof I hereto affix my signature.

WILLIAM A. CHRYST.