Jan. 17, 1928. 1,656,586

W. HEMINGWAY, JR

ELECTRIC SWITCH

Original Filed Dec. 20, 1922 3 Sheets-Sheet 1

Fig. 1.

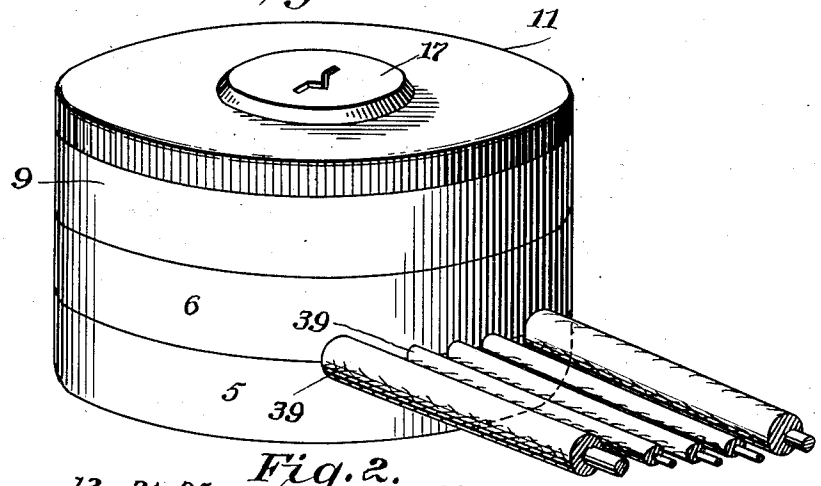


Fig. 2.

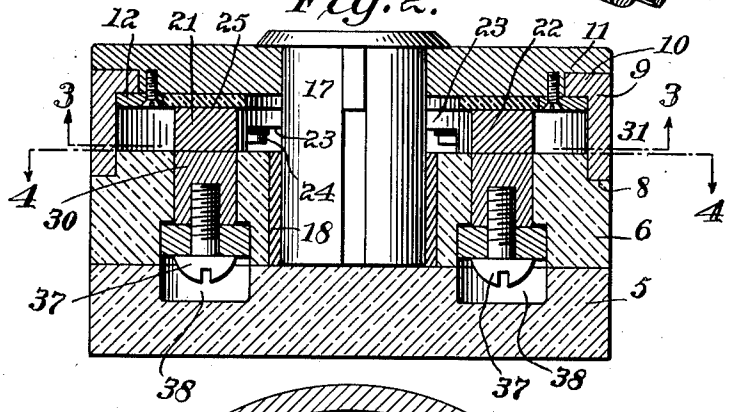
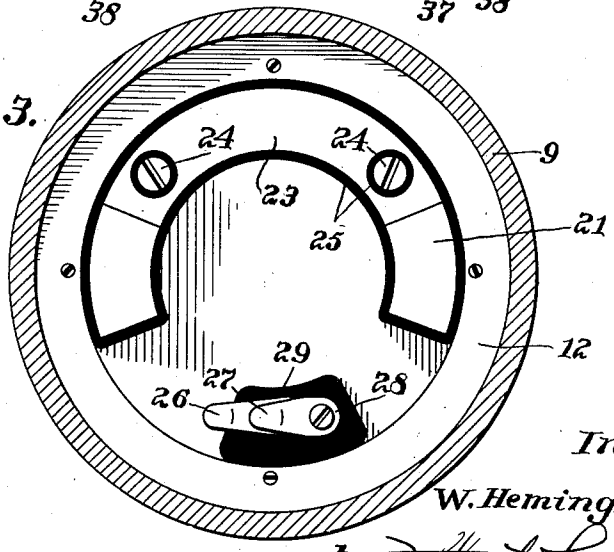


Fig. 3.



Inventor:
W. Hemingway, Jr.,
by Atherton Lough & Co.
Atty's.

Jan. 17, 1928. 1,656,586

W. HEMINGWAY, JR

ELECTRIC SWITCH

Original Filed Dec. 20, 1922 3 Sheets-Sheet 2

Fig. 4.

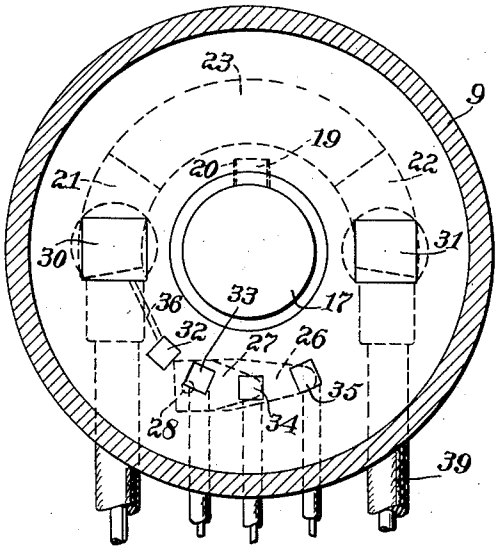


Fig. 5.

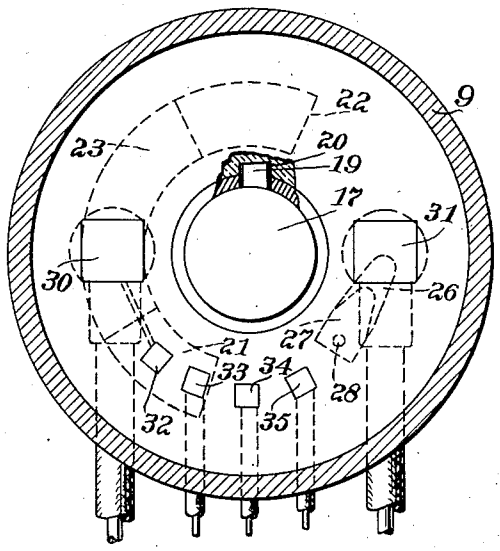


Fig. 6.

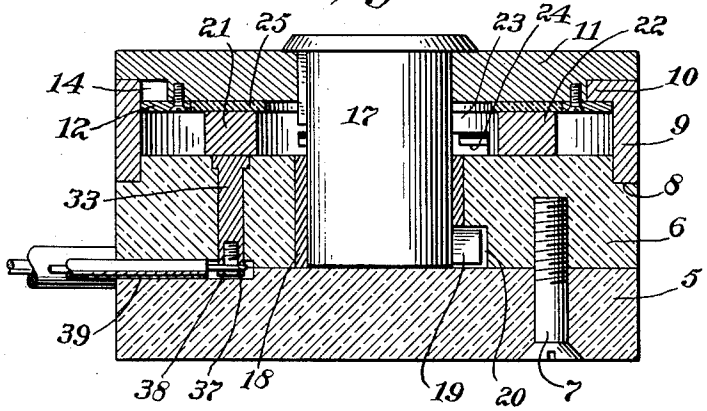
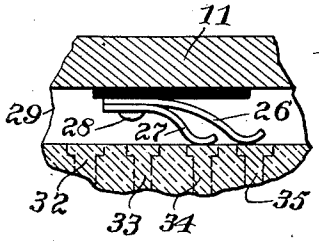


Fig. 7.



Inventor:

W. Hemingway, Jr.,

by Atherton Hawley & Co

Attys.

Jan. 17, 1928. 1,656,586

W. HEMINGWAY, JR

ELECTRIC SWITCH

Original Filed Dec. 20, 1922 3 Sheets-Sheet 3

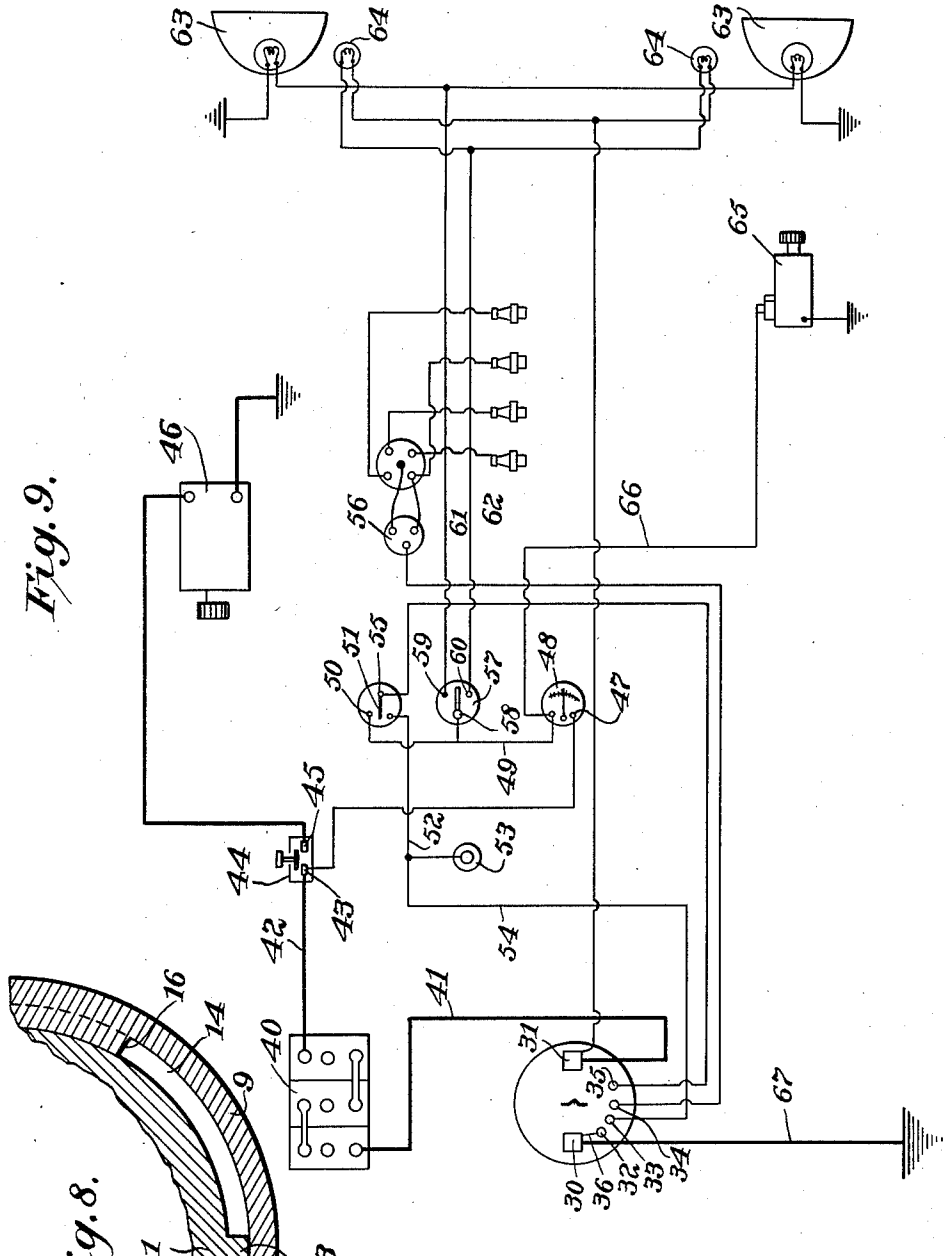


Fig. 9.

Fig. 8.

Inventor:

W. Hemingway, Jr.,

by Pollard & Lamb

Attys.

Patented Jan. 17, 1928. 1,656,586

UNITED STATES PATENT OFFICE.

WILSON HEMINGWAY, JR., OF VICKSBURG, MISSISSIPPI, ASSIGNOR TO THE ELECTRO-LOCK MANUFACTURING COMPANY, OF VICKSBURG, MISSISSIPPI, A CORPORATION OF MISSISSIPPI.

ELECTRIC SWITCH.

Original application filed December 20, 1922, Serial No. 608,055. Divided and this application filed April 2, 1924, Serial No. 703,733. Renewed December 13, 1927.

This invention relates to an improved switch constituting a division of the subject matter disclosed in my copending application Serial No. 608,055, filed December 20, 1922.

An important aim of the present invention is to provide a switch which is of comparatively simple and inexpensive construction and has the various parts thereof so formed and co-related as to reduce to a minimum the size of the completed switch.

A further aim of the invention is to provide a switch, particularly adapted for automobile use and having means for instantly shutting off the flow of current from the battery and the magneto and for simultaneously disrupting the ignition system to prevent the latter being supplied with current from the generator.

A still further aim of the invention is to equip the switch with locking means functioning automatically upon movement of the switch to open position. By making the locking means automatic in operation, the protection, against unauthorized use, of the electrical circuits controlled by the switch is not left to the option of an owner of a car, but is provided for automatically by the locking means upon movement of the switch to open position.

Other purposes and advantages of the invention not specifically stated above, will become apparent from the following description and accompanying drawings.

In the drawings:

Fig. 1 is a perspective view of my improved switch.

Fig. 2 is a vertical sectional view of the switch, the lock barrel being shown in elevation.

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 2.

Fig. 5 is a view similar to Fig. 4, but indicating a different position of the parts disclosed.

Fig. 6 is a view similar to Fig. 2, but taken at right angles thereto.

Figs. 7 and 8 are fragmentary detail views.

Fig. 9 is a diagrammatic view showing the manner in which my improved switch is embodied in a system of electrical distribution, such as now is commonly employed on automobiles, motor boats and the like.

In constructing my improved switch a sectional base of insulated material is provided, including a lower section 5 and an upper section 6. The two sections are preferably held together by removable screw bolts 7, although it is obvious that other fastening means may be substituted if desired. At its upper edge the section 6 is cut away to provide a shoulder 8 on which is supported an annular casing 9 having an inwardly directed flange 10 at the upper edge. This flange provides a support for a rotatable cover member 11 to the inside of which is secured a retaining ring 12 which projects beneath the flange 10 and serves to hold the cover against separation from the casing 9 while permitting rotary movement of the cover in a horizontal plane. In order to limit movement of the cover in either direction it is preferred to form the cover with a projection 13, movable in a recess 14 formed in the flange 10, the end walls of said recess affording stops 15 and 16 engageable with said projection.

The cover 11 is also provided with a central opening in which is keyed the upper end of a lock barrel 17. The lower end of this barrel is rotatably supported in a suitable bushing 18 carried by the section 6 and a lock mechanism carried within the barrel preferably includes a bolt 19, and means such as a spring, for causing said bolt to automatically enter a recess or socket 20 in the base when the cover is rotated at a predetermined position.

Numerals 21 and 22 designate a pair of contact brushes which are electrically connected together through the medium of a bar 23 formed of a suitable conducting material. This bar is connected to the underside of the cover through the medium of suitable screws 24 as shown in Figure 3. The said contact brushes 21 and 22 and the bar 23 are suitably insulated from the cover and the screws 24 as indicated at 25. The cover also carries a pair of contact fingers 26 and 27, the upper ends of which are secured together and to the cover through the medium of a screw 28 being suitably insulated from the cover as indicated at 29.

The section 6 of the base carries a plurality

of contacts designated respectively by the numerals 30, 31, 32, 33, 34 and 35, the contact 32 being connected by a suitable lead 36 to the contact 30 for a purpose to be hereinafter set forth. These contacts have their upper ends disposed flush with or in the plane of the upper surface of the section 6, and are equipped at their lower ends with suitable terminal fasteners or set screws 37. As shown to advantage in Figures 2 and 6 these set screws are disposed in recesses 38 having terminal passages 39 communicating therewith, said recesses and passages being formed by cutting away the contacting faces of the sections 5 and 6.

In the use of my improved switch, the same is preferably embodied in a system of electrical distribution as disclosed in Figure 9.

In this figure, 40 represents a storage battery having one terminal connected by a heavy lead 41 to the switch contact 31. The other terminal of the battery is connected by a lead 42 to a stationary contact 43 of the starter switch 44, the remaining stationary contact 45 of the starter switch being connected to the insulated terminal of the starter 46. The first mentioned contact 43 of the starter switch is lead connected to one of the stationary contacts 47 of an ammeter 48, the remaining stationary contact of the latter being connected by a lead 49 to one of the stationary contacts 50 of the ignition switch 51. The remaining stationary contact of the said switch 51 is connected by a lead 52 to the insulated terminal of the magneto 53. The lead 52 is also connected by a tap 54 to the contact 33 of my improved switch. The movable contact 55 of the ignition switch 51 is lead connected to the contact 35 of my improved switch, while the contact 34 of the latter is lead connected to a terminal of the ignition coil 56. The light switch designated by the numeral 57 has the movable terminal 58 thereof connected to the lead 49. The stationary terminals 59 and 60 of the light switch are connected respectively by leads 61 and 62 to the insulated terminals of the head light 63 and dimmers 64. The remaining terminals of the head light lamps are grounded as indicated, while the corresponding terminals of the dimmer lamps are lead connected to the contact 31 so that the dimmer lamp circuit will remain unaffected by the opening and closing of my improved switch. The generator, designated by the numeral 65, has the insulated terminal thereof connected by a lead 66 to that terminal of the ammeter 48 to which the lead 49 is connected.

Normally, the contacts 21 and 22 of my improved switch are disposed to engage the contacts 30 and 31, while the spring contacts 26 and 27 are disposed to engage and connect the contacts 34 and 35. In this position of the improved switch it will be apparent that one terminal of the battery is grounded to the starter, head light lamps and ignition system through the medium of the lead 41 and a further lead 67 connected to the switch contact 30 so that any of the various electrical devices mentioned may be brought into use in the usual manner through the medium of the starter, ignition and other usual switches provided for this purpose. When it is desired to prevent flow of current from the battery 40 or magneto 53 it is simply necessary to turn the cover 11 of my improved switch in the proper direction to move the contacts 21 and 22 out of engagement with the contacts 30 and 31, it being understood that the contact fingers 26 and 27 are simultaneously moved out of engagement with the contacts 34 and 35 as shown to advantage in Figure 5. In this position of the switch it will be apparent that no current can flow from the battery 40 because of the disruption of the battery ground connection as effected by the separation of the contacts 21 and 22 from the contacts 30 and 31. Likewise, no current can be delivered from the magneto 53 by reason of the fact that in the open position of the switch, the contact 21 bridges the contacts 32 and 23 as shown to advantage in Figure 5 so that the insulated terminal of the magneto is grounded through the leads 54, 36 and 67.

When the system of electrical distribution disclosed is used on an automobile, the breaking of the ignition circuit by the separation of the spring contact fingers 26 and 27 from the contacts 34 and 35 is of particular advantage as it prevents possibility of starting the car by pushing it and thereby turning the motor until sufficient speed is attained for the generator to furnish current for ignition purposes.

From the foregoing it will be seen that when my improved switch is moved to open position no current will be permitted to flow from the battery or the magneto to the various electrical circuits and devices normally supplied thereby. While this switch construction is primarily provided for the purpose of instantly shutting off the flow of current upon the development of ground or short circuits, it will also be apparent that, by locking the switch in the off position through the medium of the locking bolt 19 and recess 20, unauthorized use of the apparatus to which the system is supplied is effectually prevented.

As heretofore stated, engagement of the locking bolt 19 with the recess 20, occurs automatically upon movement of the switch cover 11 to switch opening position. The key, to be used in connection with the lock, serves merely to retract the bolt from engagement with the recess 20 and to provide a convenient means to return the cover from

switch opening to switch closing position. The key is not used for moving the cover to switch opening position nor is it necessary that the same be manipulated to effect locking of the cover in this position, as such locking occurs automatically by reason of the fact that a spring or its equivalent is associated with the bolt 19 to cause the latter to enter the recess 20 when positioned opposite the same. The owner of a car equipped with a lock switch of the type disclosed herein cannot leave his car unattended without locking the ignition and other circuits against unauthorized use, unless, of course, he chooses to leave the switch closed and the motor running. In switches of similar type heretofore proposed, the locking mechanism does not function automatically upon movement of the switch to open position, but when the switch is in such position must be actuated by a key. With this type of switch it frequently happens that the operator of the car while moving the switch to open position will neglect to lock the same and thus the protection intended to be afforded by the locking means is entirely multiplied. This cannot occur with the switch provided by applicant, as the operation of the locking means is not left to the option of the owner of the car, but occurs automatically whenever the switch is moved to open position.

Having thus described in the foregoing, what I now consider to be the preferred embodiment of my invention, it is to be understood that I may resort to such changes in the construction and arrangement of parts as may be desired, providing, of course, that the contemplated changes do not depart from the spirit and scope of the appended claims.

What I claim is:

1. A switch for use in a system of the character described comprising a base of insulating material, a pair of stationary contacts mounted thereon, a shell surrounding said contacts and resting on the base, a rotatable cover closing the upper end of the shell and carrying contacts, means movable therewith to engage and disengage said stationary contacts by rotation of the cover, said cover being free to rotate relatively to the base when the switch contacts are in switch closing position and means acting automatically to lock the cover to the base immediately upon rotation of the latter to a position disengaging the cover contacts from the base contacts, said locking means being of the key-releasable type.

2. A switch as recited in claim 1 in which the aforesaid locking means comprises a lock barrel having its upper end secured in a central opening formed in the said cover and its lower end rotatably mounted in a socket formed in the base, said barrel encasing a suitable locking mechanism including a spring pressed bolt adapted to automatically enter an opening in the wall of said socket to lock the cover to the base when the cover is moved to a position supporting the cover and base contacts.

3. A switch comprising a base equipped with a pair of main stationary contacts and a pair of auxiliary stationary contacts, one of the main stationary contacts being grounded and also lead connected to one of the auxiliary stationary contacts, a cover rotatably secured to said base, a pair of main movable contacts carried by the cover and movable therewith into and out of engagement with the main stationary contacts, one of said main movable contacts being arranged to bridge the auxiliary stationary contacts when said main movable contacts are moved to a predetermined position out of engagement with the main stationary contacts.

4. A switch as recited in claim 3 including means functioning automatically to lock the cover to the base when the cover is rotated to a position in which the auxiliary stationary contacts are bridged by one of the main movable contacts as aforesaid.

5. A switch comprising a base equipped with a pair of main stationary contacts, one of which is grounded, a pair of spaced auxiliary stationary contacts also carried by the base, a lead connection between one of said auxiliary contacts and the grounded main contact, a second pair of spaced auxiliary stationary contacts carried by said base, a cover rotatably secured to the base and equipped with a pair of main movable contacts shiftable therewith from a position engaging the main stationary contacts to a second position out of engagement with said main stationary contacts, one of said main cover contacts serving, in the last mentioned position, to bridge the first mentioned auxiliary stationary contacts, and movable auxiliary contact means carried by the cover and serving to bridge the second pair of auxiliary stationary contacts in the first mentioned position of the main cover contacts and to disengage said auxiliary stationary contacts when the main cover contacts are moved out of engagement with the main base contacts.

6. A switch as recited in claim 5 equipped with a key releasable locking mechanism functioning automatically to secure the cover to the base practically simultaneous with movement of the main cover contacts out of engagement with the main base contacts.

7. A switch comprising a base equipped with a pair of main stationary contacts and a pair of auxiliary stationary contacts, a cover rotatably carried by the base and cooperating therewith to form a casing enclosing said contacts, a pair of main movable contacts carried by the cover and movable there-

with into and out of engagement with the main stationary contacts, and movable auxiliary contacts also carried by the cover and movable into and out of engagement with the auxiliary stationary contacts, the arrangement being such that the circuit connection through the auxiliary contacts is established and disrupted simultaneously with establishment and disruption of the circuit connections through the main contacts.

8. A switch as recited in claim 7 including means functioning automatically to lock the cover against movement when said cover is shifted to a position disengaging the main cover and base contacts.

9. A switch comprising main and auxiliary sets of circuit closing contacts, a locking member, and means for shifting both sets of contacts to circuit opening position in response to and simultaneous with movement of the locking member to locking position.

10. A switch comprising main and auxiliary sets of circuit closing contacts, a rotary member for shifting both sets of contacts to and from circuit closing position, and a lock for said rotary member arranged to function automatically when said rotary member is shifted to a circuit opening position.

In testimony whereof I hereunto affix my signature.

WILSON HEMINGWAY, JR.