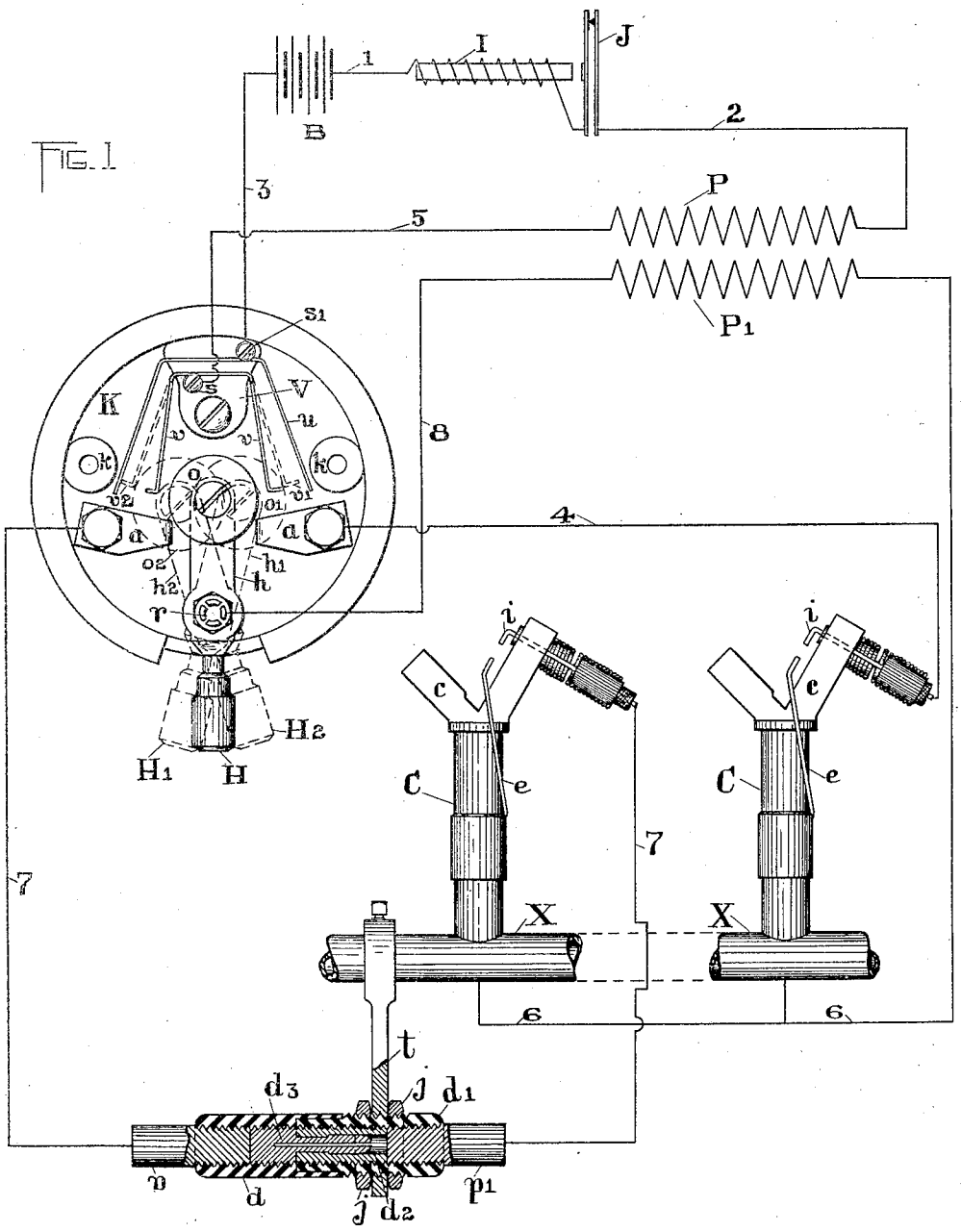
C. D. ROLFE & C. F. FOX.

SWITCH.

APPLICATION FILED JAN. 7, 1907.

**914,515.** Patented Mar. 9, 1909.

FIG. 1




Witnesses:
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# UNITED STATES PATENT OFFICE.

CARL D. ROLFE AND CARL F. FOX, OF ROCHESTER, NEW YORK, ASSIGNORS TO CHAS. A. ROLFE, OF REDLANDS, CALIFORNIA.

## SWITCH.

No. 914,515. Specification of Letters Patent. Patented March 9, 1909.

Application filed January 7, 1907. Serial No. 351,047.

*To all whom it may concern:*

Be it known that we, CARL D. ROLFE and CARL F. FOX, citizens of the United States, and residents of Rochester, in the county of Monroe and State of New York, have invented a new and Improved Switch, of which the following is a specification.

This invention relates to switches such as may be used in controlling primary and secondary circuits in automobile lighting apparatus.

An essential feature of our invention comprises a switch so constructed as to its coöperating parts and provided with such connections that for the normal position of the switch all circuits controlled thereby are open and the coöperating parts of the switch are so arranged that it is impossible to secure an improper sequence of events in the opening and closing of the primary and secondary circuits of the igniting apparatus, while at the same time permitting ignition of either one of two lamps independently of the other and preventing the ignition of the other lamp except when the switch is actuated especially for that purpose, that is, either lamp may be ignited individually and during such operation the ignition of the other lamp is prevented.

The accompanying drawings illustrating our invention are as follows:—

Figure 1 shows our switch in plan view and in this figure there is also shown in diagram the circuit connections for the several parts of the lighting apparatus of an automobile and also two of our burners properly connected up in circuit and also in one lamp circuit one of the detachable connectors made use of in making such connections whereby either lamp may be readily cut out of circuit for the purposes of cleaning, repairing, etc.

Similar characters refer to similar parts throughout all of the drawings.

Referring to the drawings,—P and $P^1$ are the primary and secondary respectively of an induction coil adapted to use for igniting the lamps.

B is the battery connected by wire 1 to the magnet I actuating the automatic break piece J, of the usual construction, the right hand contact of which is connected by wire 2 to one end of the primary P, from the other end of which wire 5 leads to and is secured under the screw *s*, threaded into the insulating block V, which may be of fiber, and contacting with the connecting member of the U-shaped spring *v*, which is seated and thus held in a suitable slot therefor in the block V. The battery B is connected by wire 3 to the screw $s^1$ engaging the middle member of the U-shaped spring *u* which is also similarly seated and held in a suitable slot therefor in the block V. The springs *u* and *v* are thus held in place and also connected in their proper circuits by the screws $s^1$ and *s*, respectively.

K is the base piece for the switch of circular form and is adapted to be secured to the induction coil at one end, but it is shown in the drawings as detached in order to clearly illustrate the circuit connections. The switch base K carries bosses *k* which serve to limit the motion of the free ends of the arms of the spring *u* when the switch is actuated in the manner to be explained.

*h* is the blade of the switch having the insulating handle H, and on the end of the blade *h* is secured an insulating disk *o*, the edge of which is adapted to engage either the right or left hand member of the contact spring *v* as the switch handle H is moved respectively to the left or to the right.

*r* is the pivotal point of the switch blade *h* and *a* are fixed spring contacts adapted to be engaged by the blade *h* as the switch handle H is operated, such engagement always taking place prior to the closing of the circuit of the primary P of the induction coil by the contacting of the right or left hand members of the springs *v* and *u* actuated by the disk *o* on the switch blade *h*. The arrangement of the parts, as will at once be understood by reference to the drawings, is such that the blade *h* contacts with one of the springs *a* prior to the closing of the primary circuit, by the actuation of the handle H, and when such handle is released the springs *v* tend to assume the positions shown in full lines, forcing the blade *h* out of contact with either of the springs *a*, but, however, not until the primary circuit has first been opened by an arm of the spring *v* moving away from the corresponding arm of the spring *u*, with which it has been made to contact. The positions which the parts H, *o* and *v* assume at the time when the blade *h* contacts with the right hand spring *a* is indicated respectively at $H^1$, $h^1$, $o^1$ and $v^1$, while the respective positions which such parts assum when the

handle H has been moved to the right far enough to cause the left hand member of the spring $v$ to contact with the corresponding member of the spring $u$ are indicated at $h^2$, $o^2$ and $v^2$. The handle H may be forced still further to the right or to the left until the left or right hand member respectively of the spring $u$ contacts with the corresponding boss $k$. Upon releasing the handle H, the action of the springs $v$ returns the switch elements to the positions indicated in full lines. The pivotal point $r$ of the switch blade $h$ is connected by wire 8 with one end of the secondary $P^1$, the other end of which is connected by wire 6 to the supply pipe X for the burners C, with which the sparking terminals $e$ of the right and left hand burners C are of course in electrical connection, while the sparking terminals $i$ of the right hand burner C is connected by wire 4 with the right hand spring contact $a$ and similarly the sparking terminal $i$ of the left hand burner C is connected by wire 7 with the left hand spring contact $a$.

In the wire 7 there is seen a detachable connector, the construction of which we will now explain.

$p$ and $p^1$ are metallic plugs threaded into the separable insulating sections $d$ and $d^1$. Within the section $d^1$ there is also threaded the plug $d^3$, the right hand half of which is reduced in size but carries an enlarged head on its outer end and this plug $d^3$ is split, as indicated, throughout the greater portion of its length; there is similarly threaded into the right hand insulating section $d^1$ a socket member $d^2$ having an enlarged recess adapted to receive the enlarged end of the split plug $d^3$. The construction of the parts just described, as will at once be understood, tends to hold such parts in the operative positions shown in the drawings when once forced to such positions, causing the outer end of the split plug $d$ to yield in entering the restricted portion of the socket $d^2$.

Each burner C has a bifurcated and integrally formed tip $c$ of lava with the usual cross shaped openings therein connecting directly with the bore of the main stem portion of the burner C, to which it may be secured in any suitable way well known in the art.

The operation of our lighting apparatus is as follows:—The circuit connections are made, as indicated, and upon turning on the supply of acetylene gas, the same is ignited at the right and left hand burners C by moving the switch handle H to the left and to the right respectively, energizing first the primary P, the circuit of which is through the automatic interrupter J, while the circuit of the secondary $P^1$ is through the sparking gap between the sparking terminals $i$ and $e$ of the right and left hand burners C.

We prefer, in connecting our switch with the lamp of an automobile, to make use of a detachable connector of the style shown in the drawings, in which the section $d^1$ of the insulating sheath is exteriorly threaded, as seen, to receive the nuts $j$, by means of which the section $d^1$ may be rigidly secured to a flange or other suitable part of the lamp as $t$ in order that any strain which may come upon the parts in separating the connector, whether intentionally or by accident, may be sustained by a rigid part of the lamp rather than by the connection between such connector 7 and the tip $c$ of the burner C and by such tip. The part of the connector $d^1$ being attached to the lamp, there is no strain exerted upon the connector 7 leading therefrom to the sparking electrode $i$ of the burner, and thus a tendency to either break the lava tip of the burner or to distort the yielding or elastic portion of the connector 7 at the tip of the burner is avoided.

Attention is called to the following points: Either lamp may be ignited independently of the other,—either lamp may be ignited first and the other thereafter;—the normal position of the handle H under the influence of the springs $v$ is such that all the circuits of the igniting apparatus are normally open and they are immediately caused to assume such open circuit positions upon the release of the handle H,—in lighting either lamp, the secondary circuit is first connected to the sparking terminals of such lamp and then the primary circuit is closed and again opened before the secondary circuit is disconnected from the sparking terminals of such burner and that this sequence of events is always maintained no matter which lamp is lighted first or whether one lamp is lighted alone or both lamps lighted, one after the other.

What we claim is:—

1. In a switch mechanism, two insulated, spring actuated and normally open contact members adapted to close a first circuit; a relatively fixed contact and coöperating therewith but insulated therefrom a swinging arm adapted to be moved to engage such fixed contact to close a second circuit and a member carried by such arm adapted when such arm is moved still farther when in engagement with such fixed contact to force such spring actuated contact members into engagement with each other to close the first circuit.

2. In a switch mechanism, two insulated, spring actuated and normally open contact members adapted to close a first circuit; a relatively fixed contact and coöperating therewith but insulated therefrom a swinging arm adapted to be moved to engage such fixed contact to close a second circuit and a member carried by such arm adapted as such arm is moved still farther when in engagement with such fixed contact to force such spring actuated contact members into engagement

with each other to close the first circuit, such arm electrically insulated from such spring actuated contact members.

3. In a switch mechanism, two insulated, spring actuated and normally open contact members adapted to close a first circuit; a relatively fixed contact and coöperating therewith but insulated therefrom a swinging arm adapted to be moved to engage such fixed contact to close a second circuit and a member carried by such arm adapted as such arm is moved still farther when in engagement with such fixed contact to force such spring actuated contact members into engagement with each other to close the first circuit, such member adapted, when such arm is returned to its neutral position, to release such spring actuated contact members before such arm disengages from such fixed contact.

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