

June 3, 1924.

1,496,449

S. F. BRIGGS

DIMMING SWITCH

Original Filed March 8, 1915 2 Sheets-Sheet 1

FIG. 1.

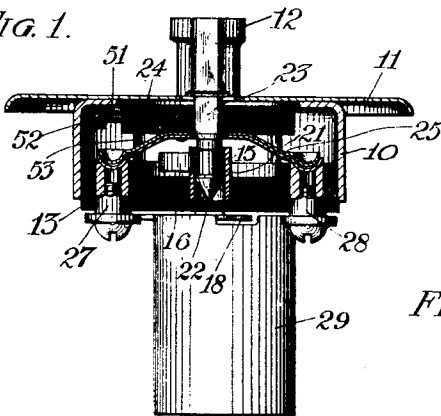


FIG. 7.

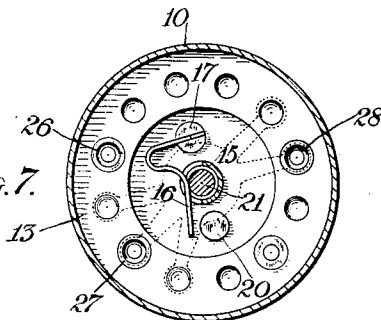


FIG. 8.

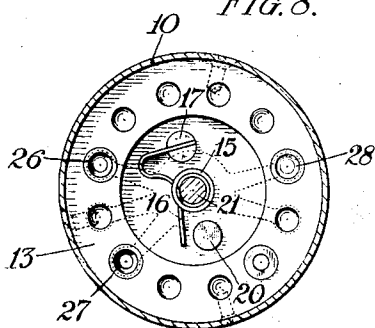


FIG. 5.

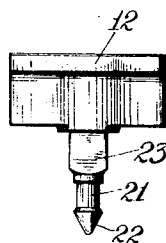
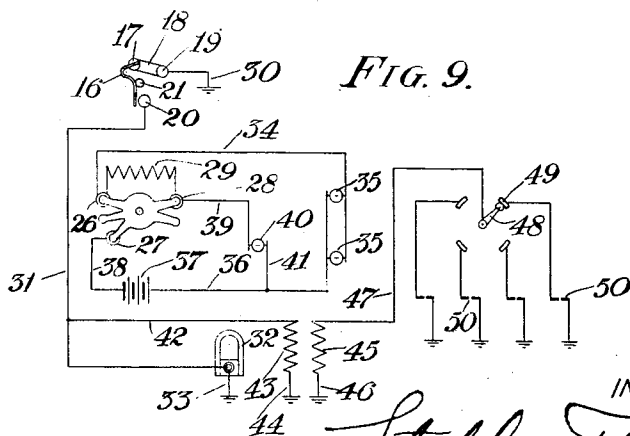


FIG. 9.



WITNESSES.

C. L. Haal
H. D. Chase

INVENTOR.

By *Stephen T. Briggs*
R. S. C. Cahill
ATTORNEY.

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S. F. BRIGGS

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FIG. 2.

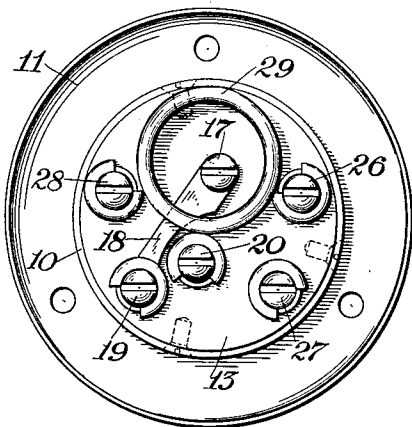


FIG. 3.

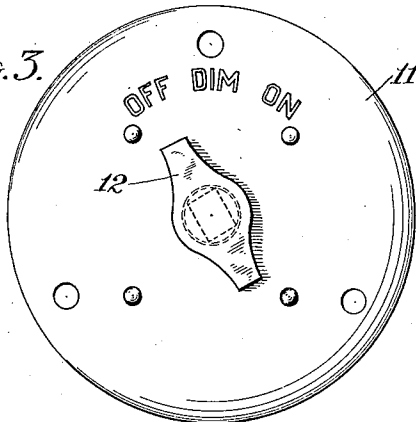


FIG. 4

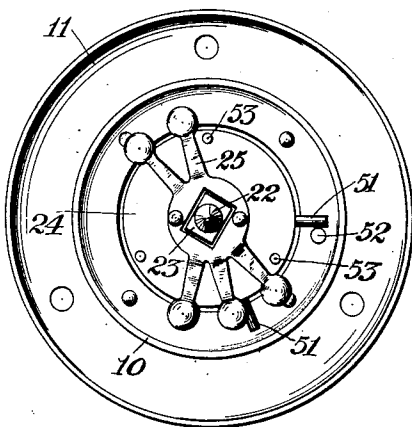
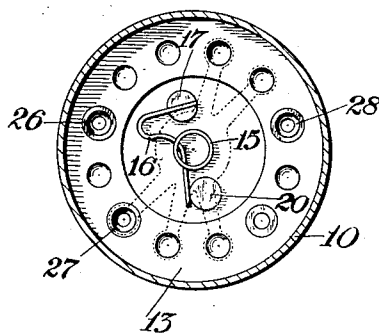


FIG. 6.



WITNESSES.
O. L. Neal
H. D. Chase.

INVENTOR.
By Stephen F. Briggs,
R. S. Caldwell.
ATTORNEY.

UNITED STATES PATENT OFFICE.

STEPHEN F. BRIGGS, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO BRIGGS & STRATTON COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

DIMMING SWITCH.

Original application filed March 8, 1915, Serial No. 12,873. Divided and this application filed August 10, 1917. Serial No. 185,457.

To all whom it may concern:

Be it known that I, STEPHEN F. BRIGGS, a citizen of the United States, and resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Dimming Switches, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention has for its object to provide a switch for controlling the electric lights of an automobile or the like.

Another object of the invention is to provide such a switch capable of dimming the headlights by introducing resistance in series therewith.

Another object of the invention is to perfect details of construction of a switch of this type to render it durable and efficient in use, though inexpensive to manufacture.

With the above and other objects in view the invention consists in the dimming switch as herein claimed and all equivalents.

This case constitutes a division of application for lighting and ignition switches, Serial No. 12,873, filed March 8, 1915.

Referring to the accompanying drawings, in which like characters of reference indicate the same parts in the different views:

Fig. 1 is a sectional elevation of a dimming switch constructed in accordance with this invention;

Fig. 2 is a rear view thereof;

Fig. 3 is a front view thereof;

Fig. 4 is a rear view thereof with the base removed and showing the key in place in the switch member;

Fig. 5 is a view of the key alone;

Fig. 6 is a sectional plan view showing the arrangement of contacts on the switch base with the relative position of the switch arms shown in dotted lines and representing the "off" position of the switch;

Fig. 7 is a similar view showing the "dim" position of the switch;

Fig. 8 is a similar view showing the "on" position of the switch; and

Fig. 9 is a diagram of electrical circuits controlled by the switch.

In these drawings 10 indicates a casing which is cylindrical and has an inturned flange at one end by which it is connected to an ornamental disk-shaped front plate 11

preferably bearing the words "Off," "Dim" and "On" for indicating the condition of the switch connections in the different positions of a switch key 12, fitting in a central opening of the plate. A switch base 13, consisting of a disk of insulating material fitting in the end of the casing 10 and held in place by screws 14, has a metal sleeve 15 embedded centrally therein and projecting above the recessed upper surface of the base where it is slotted to receive a flat spring 16 mounted on a post 17 which on the rear of the base is connected by a metal strip 18 with a binding post 19. This flat spring after making a reverse bend enters the slot of the tube and then engages a contact post 20 which forms a binding post on the back of the base, the binding posts 19 and 20 being adapted for connection with the terminals of a magneto for grounding or short circuiting the magneto by the engagement of the spring 16 with the contact post 20 when the key is removed. The key 12 has a reduced cylindrical neck portion 21 and a conical enlarged tip 22 which serve to force the contact spring 16 away from the contact post 20 when the key is inserted in the switch, the spring also serving to retain the key in place by engaging the enlarged tip thereof at the reduced neck portion 21. The key has an operating portion 23, rectangular in cross section, and preferably oblong to fit within a correspondingly shaped opening in a disk-like switch member 24 of insulating material which bears against the underside of the front plate 11 between the shoulders formed by the inturned flange of casing 10 where it is held by the spring pressure of the spring arms of a spring contact spider 25 which is secured to the underside of the switch member 24 and bears with the convex outer ends of its radial spring arms against the upper surface of the insulating base 13. The center of the spider 25 has an opening sufficiently larger than the opening through the switch member 24 to be protected from contact with the key 12, and the spider is preferably in duplicate so as to give greater durability to the flexible spring arms. The top of the base 13 is provided with a circular series of regularly spaced recesses or depressions forming seating cavities for the convex ends of spring contact arms 25, and

certain of these depressions are formed in the ends of metal bushings forming stationary contacts 26, 27 and 28. These stationary contacts form binding posts and the binding posts 26 and 28 have the terminals of a resistance unit 29 connected therewith, such resistance unit being here shown in the form of a wire wound tube with an insulating coating, though it may be of any form.

In connecting up the switch the binding post 19 is connected to the ground at 30, and the binding post 20 by a wire 31 with one terminal of the armature of a magneto 32 whose other terminal is grounded at 33. The binding post 26 is connected by a wire 34 with one or more headlights 35 which are also connected by a wire 36 with one terminal of a battery 37 whose other terminal 38 is connected to binding post 27, while binding post 28 is connected by a wire 39 with a taillight 40 which is also connected by a wire 41 with wire 36 leading to the battery.

In the "off" position of the switch, as shown in Fig. 6, the only stationary contact engaged by one of the spring arms 25 is battery connected contact 27, but in the "dim" position of the switch, shown in Fig. 7, both the contact 27 and the contact 28 are engaged by the spring arms, thus establishing a circuit from one terminal of the battery through wire 38, contact 27, contact arms 25, contact 28, wire 39, tail-light 40, wires 41 and 36, to the other terminal of the battery. Also, a circuit is established through the headlights with the resistance coil 29 in series therewith as follows: starting with one terminal of the battery 37, wire 38, contact 27, spring contacts 25, contact 28, resistance 29, contact 26, wire 34, headlights 35, and wire 36, to the other terminal of the battery. In this position of the switch, therefore, the tail light and the headlights are burning, but the headlights are dimmed. In the "on" position of the switch, as shown in Fig. 8, all three contacts 27, 26 and 28 are engaged by the contact arms so that the circuit through the tail-light from contact 28 is the same as before, but the circuit through the headlights is without the resistance 29 in series therewith, for the contact arm 25 engaging contact 26 establishes a circuit through the headlights direct, this circuit being from one terminal of the battery 37, wire 38, contact 27, contact arms 25, contact 26, wire 34, headlights 35, and wire 36 to the other terminal of the battery.

In any position of the switch the presence of the key 12 in the switch serves to hold the contact spring 16 out of engagement with the contact post 20, and thus open the short circuit connection for the magneto armature so that it may produce its usual office in the ignition circuit 42. As illustrated, the ignition circuit 42 includes primary winding 43 of an

induction coil grounded at 44, the secondary winding 45 of which is grounded at 46 and is connected by a wire 47 with a distributor 48, the contacts 49 of which are connected with the respective grounded spark plugs 50 of the engine.

Whenever the switch key is removed from the switch the spring contact 16, by engaging the contact post 18, grounds or short circuits the armature of the magneto, thus rendering it ineffective for producing ignition and so preventing unauthorized use of the car. In order that the switch may be confined to the three positions referred to, the switch member 24 has a pair of stop pins 51 projecting radially therefrom and adapted to contact with a stationary stop pin 52 on the rim of the casing 10. The shape of the ends of the contact arms and the shape of the recesses into which they fit is such that the switch is firmly held in any of its operative positions, and spacing posts 53 on the switch member 24 by engaging the base 13 prevent these parts being positioned too close together for proper operation of the spring arms in assembling the device.

The switch of this invention forms a simple and inexpensive means for controlling the lighting circuits, as well as the ignition circuit, giving to the headlights either a full, strong light, or a dim light, and lighting the tail light in either position, while permitting the key to be removed in any position of the switch to lock the car by rendering the ignition circuit ineffective.

When battery ignition is used the spring contact 16 is so disposed with relation to the contact post 20 that it contacts therewith when the key is inserted and springs away therefrom when the key is removed, it being only necessary to bend the end of the spring to engage the contact post on the other side thereof to effect this change.

It will be understood that the automobile switch of this invention constitutes a lighting switch by means of the co-operating contacts 25, 26, 27 and 28, and an ignition switch by means of the co-operating contacts 16 and 20, wherein the removable plug or key 12 constitutes a removable actuating member for the ignition switch and wherein the insulating disk 24 engaged with the square portion of the removable key constitutes a means controlled by the actuating member for operating the lighting switch.

It will also be understood that the automobile switch of this invention is one in which the contacts 16 and 20 control an ignition circuit and is one in which the contacts 25, 26, 27 and 28 control an electric lighting circuit including a plurality of lights 35 and 40, and this single switch construction for controlling the current in both of said circuits will in one position maintain the lights 35 and 40 brilliant and during a part

of the operation thereof will dim some of the lights by including resistance 29 in series with the lights 35.

In the manufacture of the switch it may be desirable to construct the spring spider with arms corresponding to the various recesses into which they fit and then such spring arms as are not essential for the particular arrangement of the switch desired may be removed.

The dimming resistance coil 29 when in series with the headlights, serves to check the flow of current therethrough to such an extent as to dim them, but when this resistance is in series with the taillight, as when connection is made between the battery terminal 27 and the headlight terminal 26 without direct connection with the taillight terminal 28, it is ineffective for materially changing the brilliancy of the taillight because of the relatively greater resistance of the taillight. Thus when it is inconvenient to provide a switch arm for the taillight contact in the "on" position of the switch, the same may be dispensed with and the taillight will receive its current supply through the dimming coil.

I claim—

1. An automobile lighting switch, comprising an insulating base having a contact for connection with the headlight, a contact for connection with the taillight, and a contact for connection with the battery, a resistance connected between the headlight and taillight contacts, and a switch member having contact arms for connecting the battery contact with the taillight contact in one position and connecting the battery contact with the taillight contact and the headlight contact in another position.

2. The combination, with an automobile and an ignition circuit for said automobile, of an electric lighting circuit including a plurality of lights, a single circuit for supplying the same with a current, a single switch construction for controlling both of said circuits, and a single resistance unit

forming a part of said switch and arranged to dim one of said lights without dimming all of the lights.

3. A device of the class described, comprising the combination of an ignition circuit and a lighting circuit; a resistance coil connected in said lighting circuit, and a removable plug operable to close the ignition circuit and vary the amount of resistance in said lighting circuit.

4. A device of the class described, comprising the combination of an ignition circuit and a lighting circuit, a switch for one of said circuits and a detachable plug serving as an operating member for said switch and rotatably mounted to serve as a circuit closer for the other of said circuits.

5. A device of the class described, comprising the combination of an ignition circuit and a lighting circuit including a resistance member, a movable member contacting with said resistance member to vary the resistance in the lighting circuit, and a detachable member serving to actuate said movable member and to close the ignition circuit.

6. A device of the class described, comprising the combination of two electric circuits for supplying energy to different parts of an automobile, means for varying the intensity of one of said circuits, and an actuating member for said means serving to close the other of said circuits.

7. A device of the class described, comprising the combination of an ignition circuit and a lighting circuit including a resistance member, a rotatable arm movable into and out of contact with said resistance member, and a detachable plug for rotating said arm, said plug serving to close said ignition circuit.

In testimony whereof, I affix my signature, in presence of two witnesses.

STEPHEN F. BRIGGS.

Witnesses:

MARY E. SMITH,
M. EDNA MIERS.