July 3, 1928. 1,675,352

H. L. JOYCE

SWITCH

Original Filed Nov. 5, 1925

Fig. 1

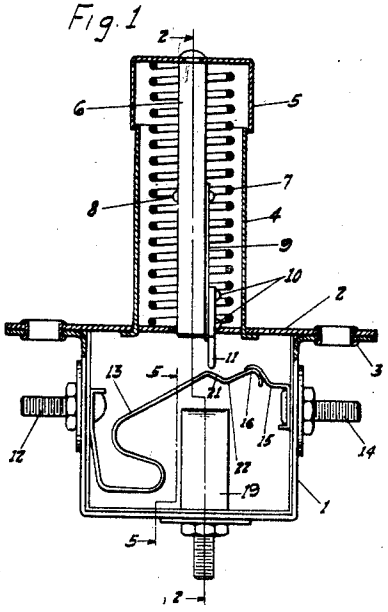


Fig. 2

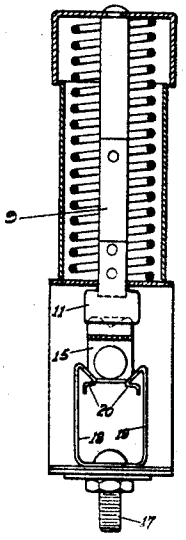


Fig. 3

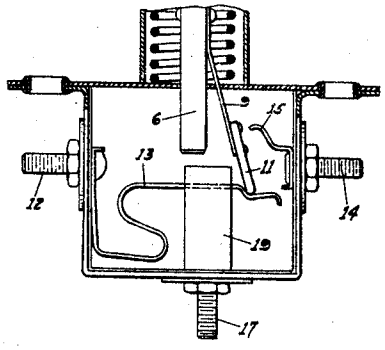


Fig. 4

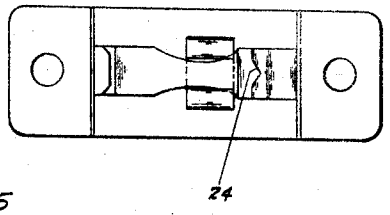
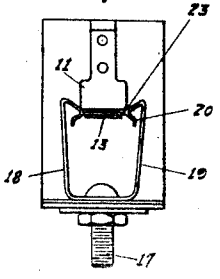


Fig. 5



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UNITED STATES PATENT OFFICE.

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SWITCH.

Application filed November 5, 1925, Serial No. 67,016. Renewed December 27, 1927.

This invention relates to a switch which may be useful in its general principles to a number of purposes but as disclosed herein is particularly adapted for use in connection with the control of lamps on an automotive vehicle.

There has recently been placed on the market a type of lamp bulb for automotive vehicles in which the bulb is supplied with two filaments of substantially the same candle-power. One filament is placed in the focus of the lamp bulb and the other out of focus or in such a position as to direct the light rays from the filament downwardly, it being assumed, of course, that a proper refractor is used with a bulb of this kind. So far as I am aware the present practice for controlling these two filaments, so as to bring either one into use according to conditions brought about by the position of the vehicle, is to carry the wires up through the steering column to a switch of some sort on the steering wheel. Since it is the usual practice to ground the sockets of the lamps, three wires for this purpose must be carried through the steering column, namely, a battery wire from the main control lighting switch, and a wire from each of the filaments. In addition to all of these wires there is the usual horn wire running through the steering column, making a rather hard and complicated problem to get these wires into the steering column at the bottom as it must be remembered that the gas control and the spark control rods are also positioned in the steering column.

It is the principal object of my invention to eliminate the filament control wires completely from the steering column, and to control the operation of the filaments by a switch preferably placed on the toe board. Such a switch can be made very rugged and substantial, and can be more readily actuated by the foot of the operator, leaving his hands free to take care of the steering wheel and horn and brake levers.

My invention will be best understood from a reading of the specification taken in connection with the annexed drawing, wherein

Figure 1, is a vertical section through the switch

Figure 2, is a section on the line 2—2 of Figure 1.

Figure 3, is a view similar to Figure 1, but with the actuating stem cut off and with the switch parts in another position of operation.

Figure 4, is a plan view of the switch with the cover and plunger removed, and with the switch lever in its down position.

Figure 5, is a view on the line 5—5 of Figure 1, with the actuating member depressed to a position whereby the switch member is released from its locked position.

Referring now to the details wherein like numbers refer to corresponding parts in the various views: 1, is a switch box preferably of punched metal having a cover 2, fastened thereto by eyelets 3, through the medium of which the switch may be mounted. To the cover 2, is fastened a stem 4 having a cap 5. To the cap 5, is fastened a plunger 6, which is preferably square or at least has a flattened end where it passes through the cover 2, to prevent the plunger from turning, a spring 7, acting between the cover 2 and the cap 5, normally holds the plunger in upward or retracted position. On one side of the plunger 6, is attached in any satisfactory manner, as by a rivet 8, a strip 9, preferably of any satisfactory resilient metal fastened to the lower end of the strip 9, by any suitable means as rivets 10, is a push member 11, of some strong insulating material. One side of the box 1 carries a terminal 12, to which is fastened a switch member 13, of good resilient material such as spring copper, and so formed as to have considerable spring tension in its different positions. The opposite sidewall of the switch carries a contact 14, to which is attached a spring 15, formed so as to engage a bent over end 16, of the extremity of the switch member 13. To the bottom of the box 1, is fastened a contact 17, having on the inside of the box a U shaped spring member with arms 18 and 19. These arms are turned over forming shoulders 20, for a purpose which will be presently described. It will be understood that the contacts 12, 14, and 17, together with their associated spring members are all insulated from the casing 1.

My switch functions as follows:

Assuming that the parts are in position as shown in Figure 1, a circuit is completed from the terminal 12, to the terminal 14, through the switch member 13, in engagement with the contact 15, and assuming that the contact 14, is connected to one of the lamp bulb filaments, the circuit would be

completed therethrough. When it is desired to switch in the other filament the plunger 6, is pushed downward, the action causes the push member 11, to assume the position shown in Figure 3. As the plunger is depressed the end of the push member 11, engages the switch member 13, on the incline portion 21, sliding down the same to the part 22, which action carries the push member 11, out of the path of the arms 18 and 19, which movement carries the switch member 13, downward to the position shown in Figure 3, so that the same drops behind the shoulders 20 of the arms 18 and 19, thereby locking the switch member 13 in contact with the members 18 and 19, which are connected to the second filament of the lamp bulb. On the next actuation of the plunger of the switch, the push member 11 moves downward parallel with the plunger and engages the curved ends 23, of the arms 18 and 19 pushing them apart and releasing the switch member 13 from engagement with the shoulders 20, so that when pressure is removed from the plunger the switch member 13 moves upward with the push member 11 into the position shown in Figure 1, thereby opening the second filament and establishing the first filament circuit. As shown in Figure 4, the switch contact 15 is notched out at 24, to provide clearance for the rivets 10, as the push member 11 is carried outward and downward in the movement shown and described for Figure 3.

While I have shown a practical form of my invention it will be apparent that numerous changes may be made in the details without departing from the spirit of my invention and the scope of the appended claims.

Having thus described my invention, what I claim is:

1. A switch comprising a casing having a plurality of relatively stationary contacts housed within the casing, and a movable switch contact member fastened to the casing, and extending over one of the stationary contacts so as to engage another of said stationary contacts, an actuating member for the switch contact member acting directly thereon, to move the switch contact member from the last mentioned stationary contact to the first mentioned stationary contact said actuating member being movable in the same direction when moving the switch contact member in the reverse direction to that previously described.

2. A switch having a plurality of relatively stationary contacts, a movable switch contact member anchored at one side of all of said stationary contacts and always being in engagement with one of said contacts, and an actuating member for the switch contact member directly engaging the same and movable in the same direction when moving the switch member from one of said contacts to another.

3. A switch having a plurality of relatively stationary contacts, a movable switch member adapted to engage at its end one of said stationary contacts and at a point intermediate its ends, another of said contacts and an actuating member engaging the switch member between said stationary contact points when moving the switch member from one contact to another.

4. A switch having a plurality of relatively stationary contacts, a flexible switch contact member anchored at one end and adapted to engage at its free end, one of said stationary contacts, and at a point intermediate its ends another of said contacts, a manually operable member for the switch member and operating directly thereon and having a unidirectional movement when moving the switch member from one position to another.

5. A switch having a plurality of relatively stationary contacts, a flexible switch member anchored at one end and adapted to engage at its end one of said stationary contacts and at a point intermediate its ends, another of said contacts and an actuating member engaging the switch member between said stationary contact points when moving the switch member from one contact to another.

6. A switch having a plurality of relatively stationary contacts, a flexible switch member anchored at one end, a plunger having a unidirectional movement and carrying a member movable with respect to the plunger for engaging the switch member, said plunger movable member engaging the switch member at different points when shifting the switch members from one contact to another.

7. A switch having a plurality of relatively stationary contacts, a movable switch member, an actuating member for the switch member and engaging the same at different points along its surface when acting to move the switch member from one switch contact to another.

8. A switch having a plurality of relatively stationary contacts, a movable switch member, rigidly fixed at one end, an actuating member for the switch member and engaging the same at varying distances from the fixed end when acting to move the switch member from one of said contacts to another.

9. A switch having a plurality of relatively stationary contacts, a movable switch member comprising a leaf spring rigidly fixed at one end and normally in engagement with one of said contacts, actuating means engaging said leaf spring at different points along its length when acting to move the switch member from one of said contacts to another.

10. A switch having a plurality of relatively stationary contacts, a movable switch contact member and a manually operable member for the switch member and operating directly thereon, means associated with one of said contacts for locking the switch member in engagement therewith when moved to engage said contact and means carried by said manually operable member for breaking the lock and transfering said switch member to another contact.

11. A switch having a plurality of relatively stationary contacts, a movable switch member and an actuating member for the switch member, one of said contacts being placed so as to be engaged by the end of said switch member, another of said contacts being placed so as to be engaged by an intermediate part of the switch member, said last mentioned contact acting to lock the switch member in engagement therewith and means associated with said actuating member for breaking the lock on the next movement thereof from that producing the locking.

12. A switch having a plurality of relatively stationary contacts, a movable switch member and an actuating member for the switch member, one of said contacts being placed so as to be engaged by the end of said switch member, another of said contacts being placed so as to be engaged by an intermediate part of the switch member, said last mentioned contact having spaced resilient arms with shoulders acting to engage and hold the switch member when the same is pushed over said shoulders and means associated with said actuating member for spreading said arms to release said switch member and to move the same to the first mentioned contact.

13. A switch having a plurality of relatively stationary contacts, a movable switch member and an actuating member for the switch member, said actuating member comprising a plunger having a reciprocatory motion said plunger carrying a push member capable of an oscillatory motion with respect to the plunger but normally held in a position parallel to the plunger, said switch member being provided with means for swinging the push member away from the plunger when moving said switch member from one contact to another for the purpose described.

14. A switch having a plurality of relatively stationary contacts, a movable switch member and an actuating member for the switch member, said actuating member comprising a plunger having a reciprocatory motion said plunger carrying a push member capable of an oscillatory motion with respect to the plunger but normally held in a position parallel to the plunger, and means for swinging the push member to a position between two of said contacts when moving said switch member from a certain one of said contacts to another.

15. A switch having a plurality of relatively stationary contacts, a movable switch member, a plunger, a push member carried by the plunger for engaging the switch member, one of said contact members being positioned in the line of movement of said plunger and push member and having means for holding the switch member when the same is moved into engagement with said contact, another of said contacts being positioned so as to be engaged by the end of said switch member, means for moving the push member out of the path of the first mentioned contact when the switch member is moved from the second to the first mentioned contact, said push member on the next movement of the plunger acting to release the switch member from the first contact as and for the purpose described.

16. A switch having a plurality of relatively stationary contacts, and a movable switch member, a plunger, a push member comprising a metal piece spring mounted on the plunger, said metal piece terminating in an insulator adapted to engage said switch member, one of said contacts having a pair of arms with shoulders thereon for engaging the switch member and holding the same when moved over said shoulders by said push member, a second contact positioned so as to be engaged by the end of the switch member, means for swinging the push member away from the plunger for the purpose described when the plunger is actuated to move the switch member from the second to the first mentioned contact, said insulator on the push member acting on the next movement of the plunger to spread said first mentioned contact arms to release the switch member from said shoulders to allow the switch member to return to engagement with the second contact.

17. A switch comprising a casing having a reciprocating plunger carried by the cover of the casing, a movable switch member mounted on a sidewall of the casing and extending to a point near the opposite wall a contact on said opposite sidewall adapted to engage said switch member, a contact mounted on the bottom of the casing and having at least one part extending toward said plunger and having holding means thereon, and means carried by the plunger for engaging the switch member adjacent the sidewall contact and for moving it into engagement with the said contact part mounted on the bottom of the casing said means on the next downward movement of the plunger acting on said contact part so as to move said holding means and shift the switch member back to said sidewall contact.

18. A switch comprising a casing having

a reciprocating plunger carried by the cover of the casing, a spring switch member having one end fastened to a sidewall of the casing and extending to a point near the opposite wall, a spring contact on said opposite wall adapted to engage the end of said switch member, a pair of spring contact arms mounted on the bottom of the casing and extending toward said plunger and having shoulders for engaging the sides of said switch member when the same is pushed over the shoulders, a push member carried by the plunger for moving the switch member from contact with the sidewall contact to the contact having shoulders, said push member on the next downward movement of the plunger engaging said pair of arms to spread the same thereby releasing said switch member as and for the purpose described.

19. In a switch, a pair of stationary contacts, holding means associated with one of said contacts, a switch contact member, a plunger, a push member carried by the plunger and adapted to engage one of said contacts to disable the holding means on one downward movement of the plunger and cause the transfer of the switch member to the other contact on the return of the plunger and means for causing the push member to engage the switch member at a different point on the next movement of the plunger for the purpose described.

In testimony whereof, I affix my signature.

HAROLD LAISTER JOYCE.