May 10, 1927. 1,628,496

H. W. FAUST

SWITCH CONSTRUCTION

Filed Dec. 21. 1925 2 Sheets-Sheet 1

Fig. 1.

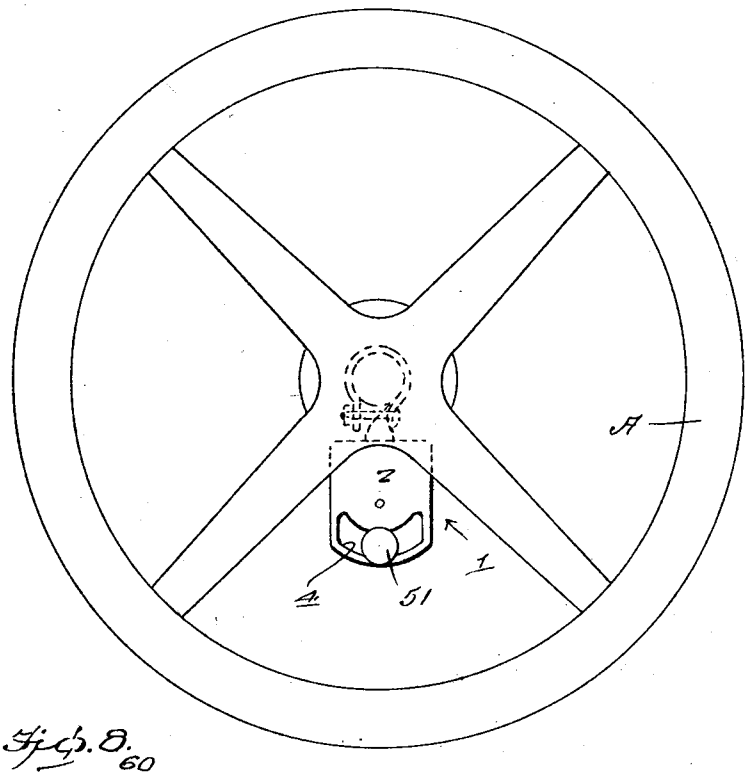


Fig. 3.

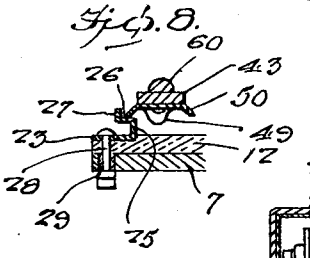
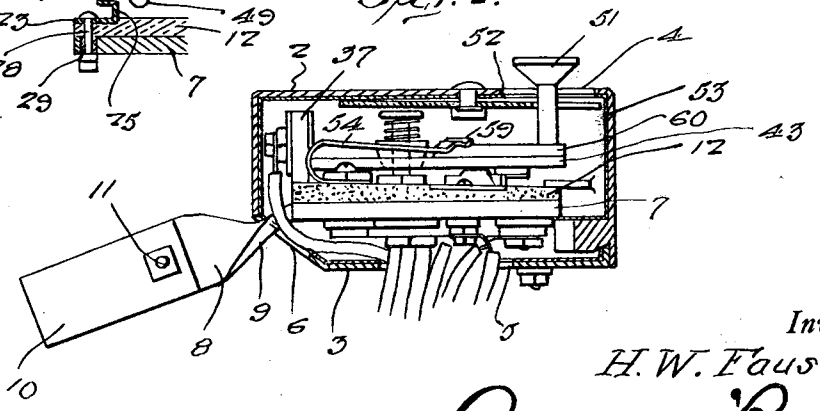


Fig. 2.



Inventor

H. W. Faust

By Clarence A. O'Brien

Attorney

May 10, 1927. 1,628,496

H. W. FAUST

SWITCH CONSTRUCTION

Filed Dec. 21. 1925 2 Sheets-Sheet 2

Fig. 3.

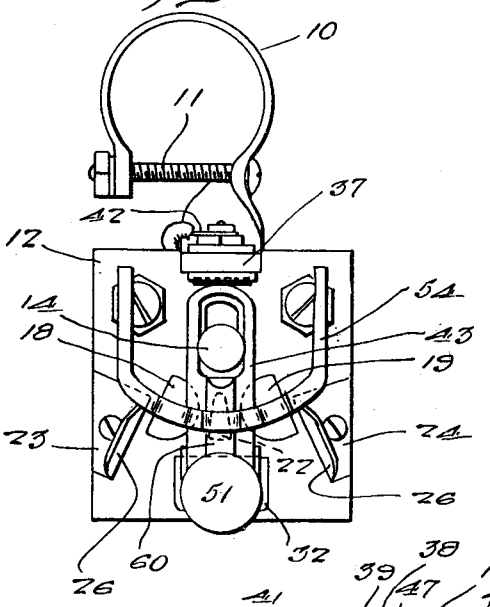
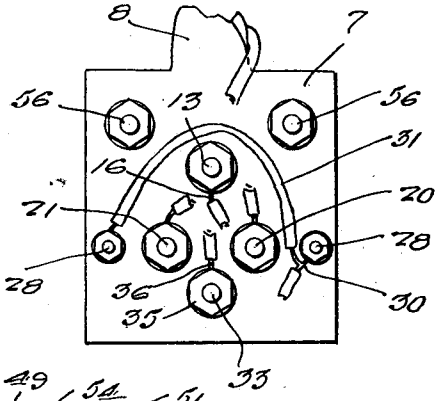


Fig. 4.



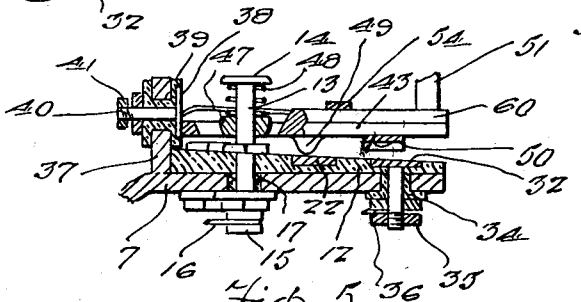


Fig. 5.

Fig. 6.

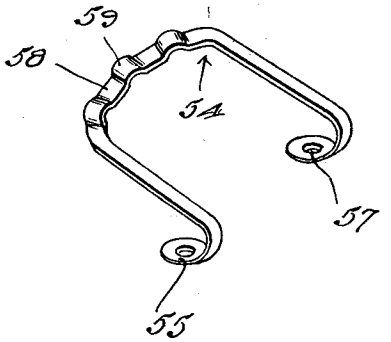
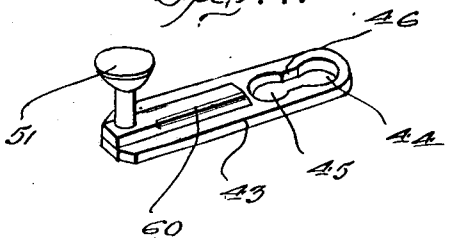


Fig. 7.



Inventor

H. W. Faust

By Clarence A. O'Brien

Attorney

Patented May 10, 1927. 1,628,496

UNITED STATES PATENT OFFICE.

HARRY W. FAUST, OF GREENVILLE, OHIO.

SWITCH CONSTRUCTION.

Application filed December 21, 1925. Serial No. 76,696.

The present invention relates to improvements in electric switches for use upon motor vehicles.

One of the important objects of the present invention is to provide a switch which provides a unitary structure for controlling the lighting of the several lights on an automobile as well as actuating the horn.

Another salient object of the present invention is to provide a switch which is of such construction as to enable the same to be ready and easily attached on the steering post of an automobile, directly below the steering wheel so that the operator may have ready access thereto for actuating the same without necessarily having to remove his hands from the steering wheel.

A further object is to provide a switch construction which will at all times be positive and efficient in its operation, the same being further simple in construction, inexpensive, strong and durable and further well adapted to the purpose for which it is designed.

Other objects and advantages of the invention will become apparent during the course of the following description taken in connection with the accompanying drawings.

In the accompanying drawings forming a part of this application and in which like numerals designated like parts throughout the same:

Figure 1 is a top plan view of the switch embodying my invention showing the manner in which the same is disposed with respect to the steering wheel.

Figure 2 is a sectional view through the casing, showing the switch structure in side elevation.

Figure 3 is a top plan view of the switch and the attaching bracket associated therewith.

Figure 4 is a bottom plan view of the base plate of the switch showing the location of the various binding posts.

Figure 5 is a view partly in elevation and partly in section of the contacts carried by the base of the switch and also illustrating the construction of the lever.

Figure 6 is a detail perspective view of the substantially U-shaped lever retention member.

Figure 7 is a detail perspective view of the lever, and

Figure 8 is a fragmentary sectional view showing the position of the lever with respect to the tail light contact when only the tail light is to be turned on.

In the drawings wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 1 designated generally my improved switch, the same comprising a substantially rectangular shaped casing 2, having a removable bottom 3 detachably secured thereon in any suitable manner. An arcuate shaped slot 4 is formed in the top of the casing adjacent the forward end thereof, and the purpose thereof will hereinafter be more fully described. A relatively large opening 5 is formed in the bottom 3 in the central portion thereof, and the rear end of the casing is cut away as illustrated at 6 with reference more particularly to Figure 2 of the drawings.

The switch further includes a substantially rectangular shaped base plate of any suitable metal, the same being designated by the numeral 7 and being of such size as to be adapted to be disposed within the casing. Extending rearwardly from the rear edge of the rectangular metallic base plate 7 is the arm 8, the same being twisted as at 9, and being adapted to extend through the cut out portion 6 provided therefor in the rear end of the casing. The outer end of this arm is curved to provide a bracket 10 which encircles the steering column of an automobile and a suitable adjusting bolt 11 is associated with the free end of the arm, and the intermediate or twisted portion 9 thereof whereby the bracket may be adjusted to adapt the same to fit on steering posts or columns of various sizes. The arm 8 is also somewhat inclined downwardly so that the casing 2 will be disposed directly below the steering wheel A within easy access of the operator of the vehicle.

A piece of insulation indicated at 12, and being of the same shape as the rectangular shaped metallic base plate 7 is secured on the upper face thereof and as is more clearly illustrated in Figures 2 and 5 of the drawings. this insulated plate 12 increased gradually in thickness toward the rear edge thereof.

A main contact post extends upwardly through the metallic base 7 and the insulated plate 12 in the central portions thereof and is preferably disposed adjacent the rear edges of the same. A head 14 is formed on the upper end of this post, the lower end thereof being threaded and providing a binding post for attaching one end of the

wide which extends from the ammeter on the instrument board of the vehicle to this post. The usual lock nuts 15 are threaded on the lower end of the post 14 for securing one end of the ammeter wire 16 thereto. It is of course to be understood that suitable insulation is provided for keeping the post 13 out of engagement with the metallic base 7, as is indicated at 17.

Embedded in the central portion of the insulated plate 12 and arranged forwardly of the main contact post 13 are the contacts 18 and 19 respectively, the same being disposed on opposite sides of the post, as is more clearly illustrated in Figure 3. The binding post for these last mentioned contacts extend through the metallic base 7 and are indicated at 20 and 21 respectively. These binding posts are also insulated from the metallic base in a manner similar to which the main contact post 13 is insulated.

The contact 18 and its binding post 20 are provided for controlling the bright headlights of the automobile, the wiring therefor being connected to the lower end of the binding post 20 by the usual nuts. The opposed contact 19 is provided for controlling the lighting of the dim lights on the automobile, and the wiring therefor is connected to the lower end of the binding post 21 in a similar manner.

A wear plate 22 of metal is embedded in the upper face of the insulated plate 12 and disposed directly forwardly of the main contact post 13 and between the headlight controlling contacts 18 and 19 respectively, in the manner as also clearly illustrated in Figure 3. The purpose of this wear plate will be apparent during the further description of the invention.

A pair of tail light controlling contacts 23 and 24 respectively are secured on the insulated plate 12 adjacent the respective side edges thereof, and these last mentioned contacts are further so arranged as to be disposed in cooperative relation with respect to the contacts 18 and 19 respectively. Each of the tail light controlling contacts comprises a flat piece of metal having one of its side edges disposed upwardly as at 25, the upper portions of the upwardly disposed sides being bent laterally as at 26 to provide a ledge, and thence disposed upwardly as at 27. This construction is more clearly illustrated in Figure 8 of the drawing, and the purpose of this particular construction will also hereinafter be more fully described. The binding post for the tail light controlling contacts are illustrated at 28, the same extending through the base 7 and the insulated plate 12, and being further insulated from the metallic base as at 29. The wire leading from the tail light is shown at 30, and the same is secured to the lower end of one of the contact posts 28 by the usual clamping nuts. A wire 32 connects the other post 28 of the opposed tail light controlling contact with the wire 30 in the manner as more clearly illustrated in Figure 4.

A contact for controlling the closing of the circuit to the electric horn (not shown) mounted on the automobile is indicated at 32, the same being embedded in the upper face of the insulation 12, and being arranged adjacent the forward edge thereof directly forwardly of the main contact post 13 and the wear plate 22. The binding post 33 of the contact 32 extends downwardly through the metallic base 7 and is insulated therefrom as at 34. The wire leading from the horn is connected to the lower end of this binding post by the clamping nut 35, the wire being illustrated at 36.

A projection 37 extends upwardly from the rear end of the metallic base 7 at the intermediate portion thereof. A spot light controlling contact 38 is disposed adjacent the front face of the projection and is insulated therefrom as clearly shown at 39. The binding posts 40 provided for the contact 38 extends through the insulation and through the projection 37 and the end of the wire which leads from the spot light is attached to the rear end of the binding post and held thereon by means of the clamping nut 41. The wire leading from the spot light to this contact is indicated at 42.

The switch further includes the lever 43 which is formed of metal, the same being provided in the rear end portion thereof with the openings 44 and 45 respectively. These openings are arranged in communication with each other through the medium of the restricted passage 46, and this construction is more clearly illustrated in Figure 7 of the drawing. The binding post 13 is adapted to extend through the slotted portion of the lever, whereby said lever will be adapted for pivotal movement across the upper face of the insulated plate 12. A substantially conical shaped sleeve 47 slidable on the post 13, and is adapted for cooperation with either of the openings 44 or 45, it being understood of course that the edges of these openings are also beveled to coact with the beveled peripheral edge of the sleeve. A coil spring 48 encircles the post 13 and is disposed between the head 14 formed on the upper end of the post, and the upper face of the conical sleeve 47 for normally urging the same downwardly and holding the same into frictional engagement with either of the openings formed in the rear end portion of the lever.

The purpose of providing the lever with a pair of interconnected openings in the manner as above described, is to provide

a means for permitting the sliding movement of the lever so that the rear end thereof may be brought into or out of cooperative relation with respect to the contact 38.

Carried by the bottom of the intermediate portion of the lever 43 is the contact 49. This contact is so arranged as to be disposed in cooperative relation with respect to the contacts 18 and 19, as well as the wear plate 22 in the manner to be presently described. An additional contact 50 is secured to the under side of the lever 43 adjacent the forward free end thereof and the same is in the form of a spring strip of metal, the ends of which are disposed downwardly and outwardly, and is more clearly illustrated in Figure 8. The last mentioned contact is adapted for cooperation with the contacts 23 and 24 respectively as well as with the contact 32.

The contacts 49 and 50 are so arranged as to normally hold the spring contact 50 out of engagement with the contact 32 so that normally the circuit to the horn is broken. The contact 49 is further adapted to provide a fulcrum to permit the downward swinging movement of the forward end of the lever 43 when the actuating knob 51 which extends upwardly from the forward end of the lever is depressed as will also be presently apparent.

The knob 51 which provides a means for actuating the lever 43 extends upwardly through the opening 4 provided therefor in the forward portion of the top of the casing 2, and is further adapted to be held out of engagement with the metallic casing through the medium of the insulated member 52 which is secured to the under side of the top of the casing, as is more clearly shown in Figure 2. The casing may furthermore be lined with insulation as illustrated at 53.

For the purpose of holding the lever in any desired adjusted position, there is provided a substantially U-shaped member 54, the same being formed of a strip of spring metal, the free ends of the arms are bent back upon themselves and are flattened as indicated at 55, and the flattened free ends of the arms are secured to the insulated plate 12 adjacent the rear edge thereof through the medium of the securing bolts 56 which extend through the base plate and the insulated plate thereon, and also through suitable openings 57 provided therefor in the flattened ends of the respective arms of the U-shaped member.

By bending the free ends of the arms in the manner as shown and above described, the U-shaped member will be disposed above the insulated plate 12 in spaced relation thereto and also as is more clearly shown in Figure 6, the crown portion 58 of the U-shaped member is provided with the bent portions 59 which are adapted for cooperation with the lug 60 arranged on the upper face of the forward portion of the lever 43 to provide a ratchet mechanism whereby the lever will be held in its desired adjusted position against accidental swinging movement. Due to the resiliency of the U-shaped member, the same will at all times be urged into engagement with the lug 60 so that the ratchet mechanism will at all times be positive and efficient in carrying out the purposes for which it is designed.

The operation of my improved switch may be briefly stated follows: Normally, the lever 43 is disposed in line with the posts 13, and the upstanding lug or projection 37 formed at the rear end of the base plate 7, and the lever is furthermore disposed in its forwardmost position so that the conical sleeve 47 arranged on the post 13 will be seated in the opening 44 formed in the rearmost end of the lever whereby the rear end of the lever is out of engagement with the contact 38. The contact 49 which is carried by the bottom of the intermediate portion of the lever will rest on the wear plate 22 and the spring finger forming the contact 50 is disposed above the contact 32 in spaced relation thereto.

Should it become necessary for the operator of the vehicle to actuate the horn, in order to give an audible signal, it is only necessary for the operator to depress the button or knob 51 whereupon the forward end of the lever 43 will be swung downwardly so that the contact 50 is brought into engagement with the contact 32 thereby closing the circuit to the horn and sounding the same. As soon as pressure is released from the knob 51, the coil spring 48 will return the lever 43 to its normal position so that the contact 50 is brought out of engagement with the contact 32 and the circuit to the horn is then broken.

When it is desired to turn on the dim lights of the automobile, the operator moves the lever 43 to the right, whereby the contact 49 is moved across the upper face of the insulation 12 and into engagement with the contact 19, thus closing the circuit to the dim lights. At the same time, the projecting end of the contact 50 will be brought into engagement with the upstanding side wall 25 of the contact 24 so as to effect the closing of the circuit to the tail light. The lugs 60 will cooperate with one of the bends formed in the U-shaped member 54 for holding the lever in such position against accidental movement.

Should it become necessary to use the spot light while the dim lights are turned on, it is only necessary for the operator of the vehicle to slide the lever 43 rearwardly so that the conical sleeve 47 will be moved out of engagement with the opening 44 and is brought into engagement with the opening

45, and the rear end of the lever will then be brought into engagement with the spot light controlling contact 38 thus causing the circuit to said lights.

In order that the bright lights of the automobile may be turned on, the lever 43 is swung to the left so that the contact 49 will be brought into engagement with the contact 18, thus closing the circuit to the bright lights. Simultaneously, the other end of the contact 50 which projects beyond the side of the lever 43 will engage the side wall 25 of the tail light controlling contact 23, whereby the tail light will be also illuminated. It will thus be seen that when either the dim or bright lights are turned on, the tail light will be simultaneously illuminated.

The spot light may be also illuminated when the bright lights are turned on by actuating the lever 43 in the same manner as heretofore described, whereby when in its farthest left hand position, the lever may be moved rearwardly so that the rear end thereof will engage the contact 38.

It is of course to be understood that when either of the headlight controlling contacts are in cooperative engagement with the contact 49 of the lever 43, the circuit to the horn may also be completed by merely tilting the knob of the lever so that the end of the contact 50 which is not in engagement with the tail light contact may be brought into engagement with the horn controlling contact 32.

To facilitate the turning on of the tail light without necessarily turning on either the dim or bright headlights, preferably when an automobile is parked, the forward end of the lever 43 is slightly raised upwardly against the tension of the coil spring 48, and also against the tension of the U-shaped member 54. The forward end of the lever is sufficiently raised so as to enable either end of the spring contact 50 carried by the forward end portion of the lever 43 to engage and rest upon the ledge or shoulder 26 formed on each of the tail light controlling contacts, and at the same time, the contact 49 will be held out of engagement with either of the contacts 18 and 19, depending upon the position in which the lever is disposed. When the parts are arranged as shown more clearly in Figure 8 of the drawings, only the circuit to the tail light will be closed.

It will thus be seen from the foregoing description, that a switch has been provided which may be readily and easily attached on an automobile in such a manner as to be within easy access of the operator, and further so arranged as to obviate the necessity of the operator of the vehicle having to remove his hands from the steering wheel in order to actuate the switch. Furthermore, a switch of the above character will provide a unitary structure wherein a single switch lever is provided for controlling six separate circuits, and the simplicity in which the switch is actuated, renders the same very efficient in its use.

The compactness of my improved switch enables the same to be manufactured at a very low cost and furthermore will present a neat appearance when attached on the steering column of an automobile.

While I have shown the preferred embodiment of my invention it is to be understood that minor changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention and the scope of the appended claims.

Having thus described the invention, what I claim as new is:—

1. A switch comprising a base, a main contact post, a pair of headlight controlling contacts on the base, a pair of tail light controlling contacts on the base adjacent the respective headlight controlling contacts, a spot light controlling contact on the base directly rearwardly of the main post, a horn controlling contact on the base arranged forwardly of the contact post and between the aforementioned tail light controlling contacts, a lever pivoted at its rear end on the post, said lever adapted to connect the adjacent pairs of headlights and tail light controlling contacts when swung on its pivot, the lever being further adapted for slidable movement whereby the rear end thereof is brought into engagement with the spot light controlling contact, a contact carried by the forward end of the lever and adapted to engage the horn controlling contact when the forward end of the lever is depressed, and means for normally holding the last mentioned contact out of engagement with the horn controlling contact.

2. A switch comprising a base, a main contact post, a pair of headlight controlling contacts on the base, a pair of tail light controlling contacts on the base arranged forwardly and adjacent the respective headlight controlling contact, a lever pivoted at its inner end on the post, a contact on the under side of the intermediate portion of said lever for engagement with either of the headlight controlling contacts, an additional contact carried by the lever adapted to engage either of the tail light controlling contacts when the first mentioned contact carried by the lever is in engagement with the adjacent headlight controlling contact, said lever being further adapted for tiltable movement on said post whereby the contact carried by the intermediate portion of the lever is disengaged from either of the headlight controlling contacts, and means for maintaining the other contact on

said lever in engagement with the adjacent tail light controlling contact.

3. A switch comprising a base, a main contact post, a pair of headlight controlling contacts on the base, a pair of tail light controlling contacts on the base arranged forwardly and adjacent the respective headlight controlling contact, a lever pivoted at its inner end on the post, a contact on the under side of the intermediate portion of said lever adapted for engagement with either of the headlight controlling contacts, each of said tail light controlling contacts comprising a flat plate secured on the base, one side edge thereof being bent upwardly and thence laterally to provide a ledge, an additional contact carried by the lever and adapted to engage either of the tail light controlling contacts when the first mentioned contact carried by the lever is in engagement with the adjacent headlight controlling contact, said additional contact comprising a spring strip of metal, the outer end portion thereof being disposed downwardly and outwardly, said lever being further adapted for tiltable movement on the post whereby the contact carried by the intermediate portion of the lever is disengaged from either of the headlight controlling contacts, and the outwardly disposed end of the spring strip forming the additional contact carried by the lever and adapted to rest on said ledge of the adjacent tail light controlling contact.

4. A switch comprising a base, a main contact post, a pair of headlight controlling contacts on the base, a pair of tail light controlling contacts on the base arranged forwardly and adjacent the respective headlight controlling contact, a lever pivoted at its inner end on the post, a contact on the under side of the intermediate portion of said lever adapted for engagement with either of the headlight controlling contacts, each of said tail light controlling contacts comprising a flat plate secured on the base, one side edge thereof being bent upwardly and thence laterally to provide a ledge, an additional contact carried by the lever and adapted to engage either of the tail light controlling contacts when the first mentioned contact carried by the lever is in engagement with the adjacent headlight controlling contact, said additional contact comprising a spring strip of metal, the outer end portion thereof being disposed downwardly and outwardly, said lever being further adapted for tiltable movement on the post whereby the contact carried by the intermediate portion of the lever is disengaged from either of the headlight controlling contacts, and the outwardly disposed end of the spring strip forming the additional contact carried by the lever being adapted to rest on said ledge of the adjacent tail light controlling contact, and means for holding the lever in its adjusted position.

5. A switch comprising a base, a said contact post, a pair of headlight controlling contacts on the base, a pair of tail light controlling contacts on the base arranged forwardly and adjacent the respective headlight controlling contact, a lever pivoted at its inner end on the post, a contact on the under side of the intermediate portion of said lever adapted for engagement with either of the headlight controlling contacts, each of said tail light controlling contacts comprising a flat plate secured on the base, one side edge thereof being bent upwardly and thence laterally to provide a ledge, an additional contact carried by the lever and adapted to engage either of the tail light controlling contacts when the first mentioned contact carried by the lever is in engagement with the adjacent headlight controlling contact, said additional contact comprising a spring strip of metal, the outer end portion thereof being disposed downwardly and outwardly, said lever being further adapted for tiltable movement on the post whereby the contact carried by the intermediate portion of the lever is disengaged from either of the headlight controlling contacts, and the outwardly disposed end of the spring strip forming the additional contact carried by the lever being adapted to rest on said ledge of the adjacent tail light controlling contact, and means for holding the lever in its adjusted position, said means comprising a substantially U-shaped member formed of a strip of spring metal, the free ends of the arms thereof being bent backwardly upon themselves and secured to the rear portion of the base, the crown portion of said U-shaped member having bent portions formed therein, and a lug carried by the forward portion of the lever adapted to coact with said bent portions.

In testimony whereof I affix my signature.

HARRY W. FAUST.