

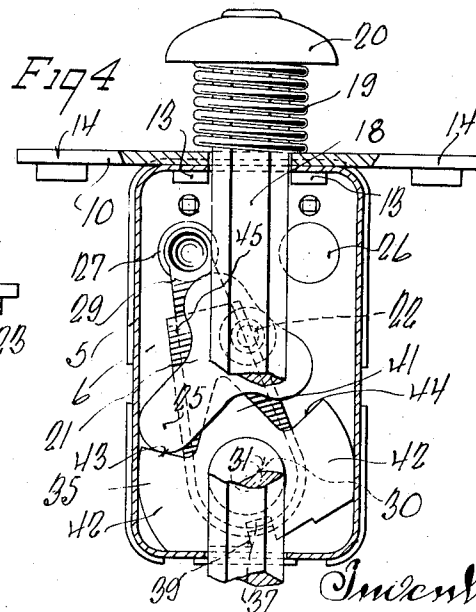
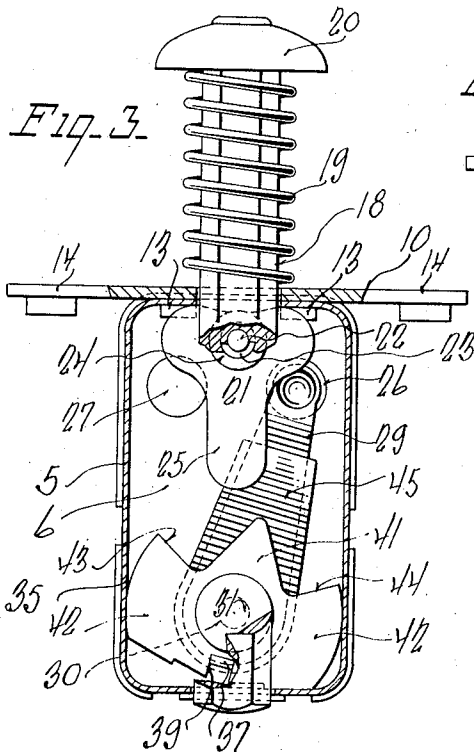
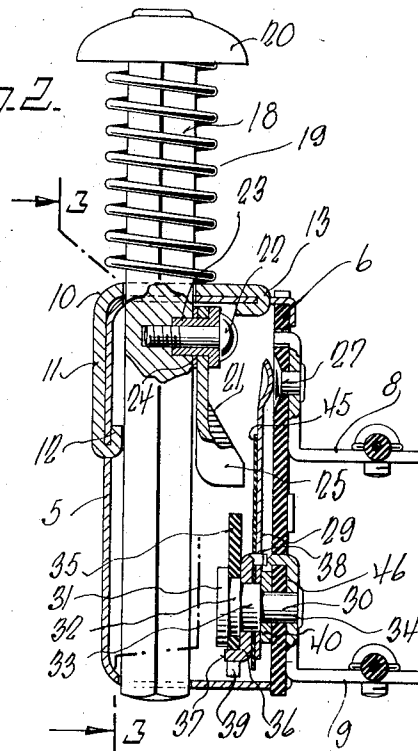
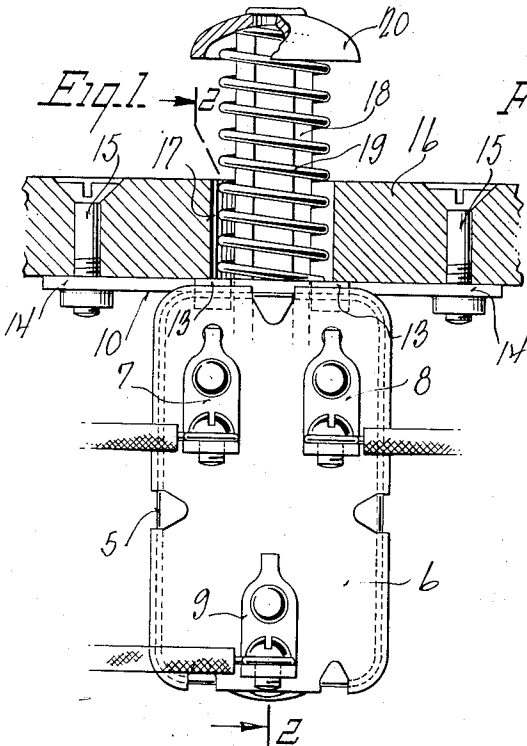
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SWITCH

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SWITCH

Application filed August 30, 1929. Serial No. 389,418.

This invention relates to certain new and useful improvement in switches and refers more particularly to a dimming switch for use with automotive vehicles, etc., and has as one of its objects to provide a switch of this character adapted to be operated by the depression of a plunger.

Another object of this invention is to simplify the design of switches of the character described, to facilitate quantity production, and to reduce the cost of manufacture.

With the above and other objects in view which will appear as the description proceeds, my invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

In the accompanying drawings, I have illustrated one complete example of the physical embodiment of my invention constructed according to the best mode I have so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a view partly in elevation and partly in section of a switch embodying my invention and illustrating the manner of its application to the floor board of an automotive vehicle.

Figure 2 is a transverse sectional view with part in elevation taken through Figure 1 on plane of the line 2—2.

Figure 3 is a sectional view taken through Figure 2 on the plane of the line 3—3; and

Figure 4 is a view similar to Figure 3 illustrating the position of the parts when the plunger is depressed.

Referring now more particularly to the accompanying drawings in which like numerals designate like parts throughout the several views, the numeral 5 represents the enclosing casing or housing of my improved switch, which is preferably rectangular and stamped from bendable metal. A cover 6 of insulating material closes the open front of the casing and mounts a switch mechanism, to be later described, within the casing

and with which terminals 7, 8, and 9 fixed to the front of the cover are electrically connected. When the switch is used to selectively connect the bright and dim filaments of headlight bulbs, not shown, with a battery, the terminals 7 and 8 are connected with the respective filaments and the terminal 9 is connected with the battery.

A bracket member 10 is fixed to one end wall of the casing by having its enlarged central portion 11 bent at right angles to engage its back wall to which it is fixed by tangs 12 and by tangs 13 extended from the major portion of the member 10. The ends 14 of the bracket 10 have threaded apertures to receive screws 15 which secure the bracket and consequently the casing to the underside of a floor board 16 or to any other suitable support.

The ends of the casing and the bracket member 10 are provided with aligned hexagonal openings to freely slidably but non-rotatably receive a correspondingly shaped stem or plunger 18, one end of which is extended beyond the bracket 10 and through an aperture 17 in the floor board 16. An expansive spring 19 coiled about the plunger and confined between the bracket member 10 and a button 20 fixed to its outer end normally yieldably maintains the plunger in raised or inoperative position, the movement of the plunger by the spring being limited by the engagement of the upper end of an actuator 21 pivotally mounted on the plunger with the underside of the upper end of the casing.

The actuator 21 is substantially T shaped as best illustrated in Figures 3 and 4 and is connected with the plunger by a screw 22, or the like, passing through its longitudinal or major axis at approximately the intersection with the axis of its arms. A bushing 23 is provided to extend through the actuator and a spring washer 24, into a recess in the plunger 18, the spring washer 24 serving to space the driver 21 slightly from the plunger and taking up any play which might exist.

The toe or lower end 25 of the actuator has its thickness increased by striking up its

marginal edges, for a purpose to be later described. It will be noted that by pivotally mounting the actuator on its major axis adjacent the axis of its arms, the toe 25 will at all times be moved to a central position in alignment with the axis of the plunger, by the engagement of either of its arms with the adjacent inner end wall of the casing upon movement of the plunger to normal inoperative position.

The switch mechanism proper, which is carried on the inner face of the insulating cover 6, comprises a pair of stationary contacts 26 and 27 electrically connected with the terminals 7 and 8 respectively and a contactor or switch arm 29 electrically connected with the terminal 9 and pivotally mounted to be selectively engageable with either of the stationary contacts 26 and 27. The pivotal mounting of the contactor 29 consists of a pin 30 having a head 31 and portions of successively reduced diameters 32, 33, and 34. The portion 32 is received in an aperture formed in a member 35 to be later described, and the portion 33 passes through a washer member 36 and the contactor, the washer 36 having tongues 37 and 38 extended at diametrical opposite points and oppositely directed to be received in a notch 39 in the member 35 and to project through an aperture in the contactor respectively, to secure the member 35 and contactor against relative rotation about the pin. The portion 34 of smallest diameter passes through a washer 40 spacing the contactor from the inner face of the cover 6 and through aligned apertures in the cover and the terminal member 9 to have its outermost end riveted or peened over to secure the several elements assembled and pivotally mount the contactor.

The member 35 is formed of insulating material such as fibre or the like, and is of substantially inverted T shape; with the sides of its leg 41 inclined upwardly toward a central apex in alignment with the axis of the contactor and directed towards its free end. The oppositely extending sides or arms 42 of the member have their lower edges arranged in an obtuse angle with respect to each other to engage the adjacent inner bottom wall of the casing and limit the pivotal movement of the contactor in both directions to align its free end with the contacts 26 and 27.

As best illustrated in Figure 2, the member 35 is in the path of the actuator toe 25 and the apex of its central inverted V shaped leg 41 comes to rest to one side or the other of a plane coinciding with the major axis of the plunger when the contactor engages one of the contacts, so that downward movement of the actuator, upon depression of the plunger, engages its toe 25 with one side or the other of the inverted V shaped leg 41 as best illustrated in Figures 3 and 4. As shown

in Figure 3 the contactor 29 is in engagement with the contact 26 and the apex of the inverted V shaped leg 41 is to the right of the said plane, whereby downward movement of the actuator will engage it on the left side of the inverted V shaped leg 41. Continued downward movement of the actuator first tips it to the left until its toe engages the upper edge 43 of the left arm 42 and then moves the member 35 and consequently the contactor to the left to engage the contact 27. Releasing the pressure on the plunger permits the spring 19 to return it and the actuator to its normal inoperative position, the actuator being returned to its central position by the engagement of its left arm with the under-surface of the adjacent casing wall.

If the plunger is again depressed it will be obvious that the actuator toe will engage the opposite, or right side of the inverted V shaped central leg of the member 35, and by engagement with the upper edge 44 of its right arm 42 will move the contactor to the right to again engage the contact 26.

To preclude the possibility of short-circuit an insulating member 45 is positioned between the washer 36 and the contactor to a point adjacent the actuator, and to insure perfect electrical contact between the terminal 9 and the contactor the usual intumed tongue 46 of the terminal 9 is provided with a sharp edge which engages the adjacent end of the tongue 38 on the washer 36.

From the foregoing description taken in connection with the accompanying drawings it will be apparent to those skilled in the art to which an invention of the character described appertains, that I provide a novel switch for dimming the headlamps of automotive vehicles and which by its simple design permits quantity production at a relatively low cost.

What I claim as my invention is:

1. In an electric switch of the character described, an open sided casing having aligned openings in its end walls, an insulating panel closing the open side of the casing, stationary contacts carried thereby, a movable contactor pivotally mounted from the panel and engageable with either of said stationary contacts, a depressible plunger slidably mounted in the aligned openings in the casing end walls, and means carried by the plunger and the movable contactor for moving the movable contactor from engagement with one stationary contact to engagement with the other upon depression of the plunger.

2. In an electric switch, an open sided casing having aligned apertures in its end walls, an insulating panel closing the open side of the casing, spaced stationary contacts carried by the insulating panel, a movable contactor pivotally mounted from the insulating panel and movable for engagement with either

of said stationary contacts, means carried by the movable contactor and engageable with one of the end walls of the casing to define the limits of movement of the movable contactor to properly align the same with the stationary contacts, a depressible plunger slidably mounted in the aligned openings of the casing end walls, and means carried by the depressible plunger and engageable with the movable contactor carried means for moving the movable contactor in one direction to engagement with one of the stationary contacts upon one depression of the plunger and to move the contactor in the opposite direction to engagement with the other contact upon a succeeding depression of the plunger.

3. In a switch of the character described, a casing having a port therein, a plurality of switch points mounted on one wall of said casing, a contactor rotatably mounted on one wall of said casing and adapted to alternately contact said points, a member having side-wise spaced abutments and movable in correspondence with said contactor, a plunger reciprocably mounted in said port and an actuator rotatably mounted on said plunger within said casing, said actuator having the end thereof remote from its pivotal point protruding out of the plane of the said actuator and contacting said member to actuate said switch.

4. In a switch of the character described, a casing having aligned ports therein, a plurality of switch points mounted on one wall of said casing, a contactor rotatably mounted on one wall of said casing and adapted to alternately contact said points, a member having sidewise spaced abutments and movable in correspondence with said contactor, a plunger mounted in said casing and passing through said ports, resilient means urging said plunger into an inoperative position, an actuator rotatably mounted on said plunger within said casing, said actuator having the end thereof remote from its pivotal point protruding out of the plane of said actuator toward said member, said protruding portion contacting said member to actuate said switch.

In testimony whereof I have hereunto affixed my signature.

EDWARD N. JACOBI.