

Dec. 22, 1925.

1,566,588

C. E. GODLEY

SWITCH

Filed Oct. 21, 1922

2 Sheets-Sheet 1

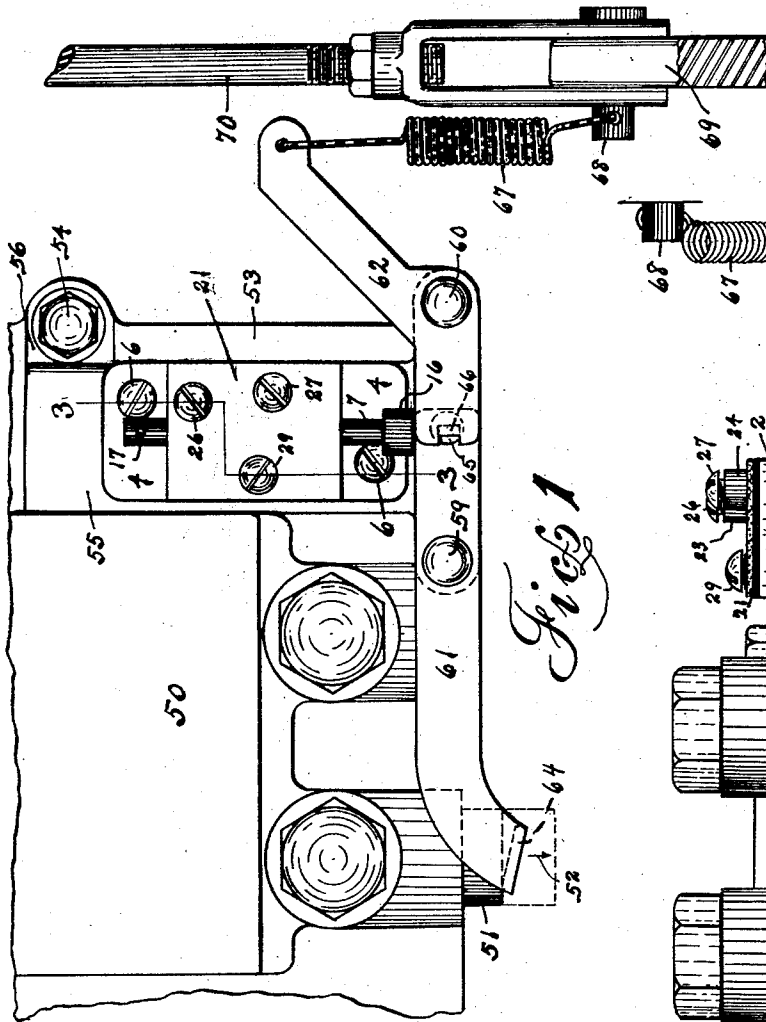


Fig. 1

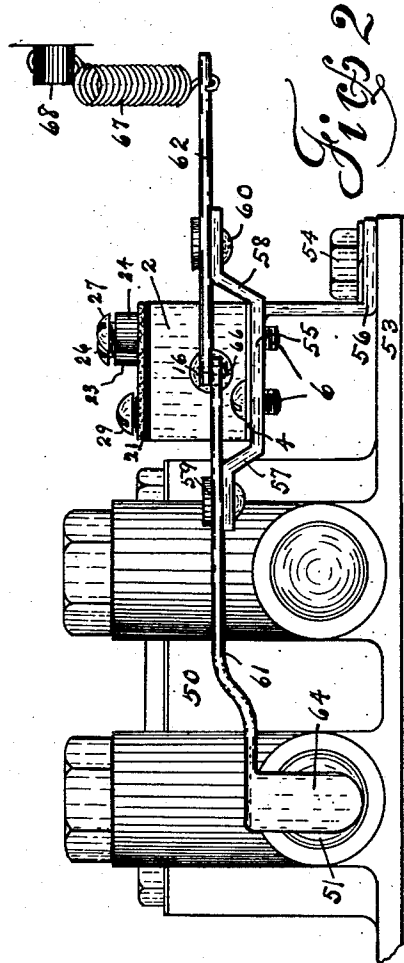


Fig. 2

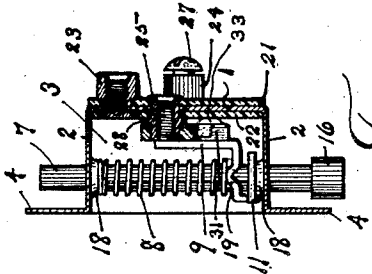


Fig. 3

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2 Sheets-Sheet 2

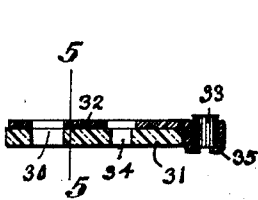


Fig. 7

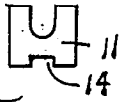


Fig. 8

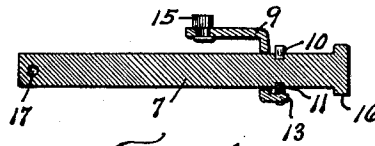


Fig. 4

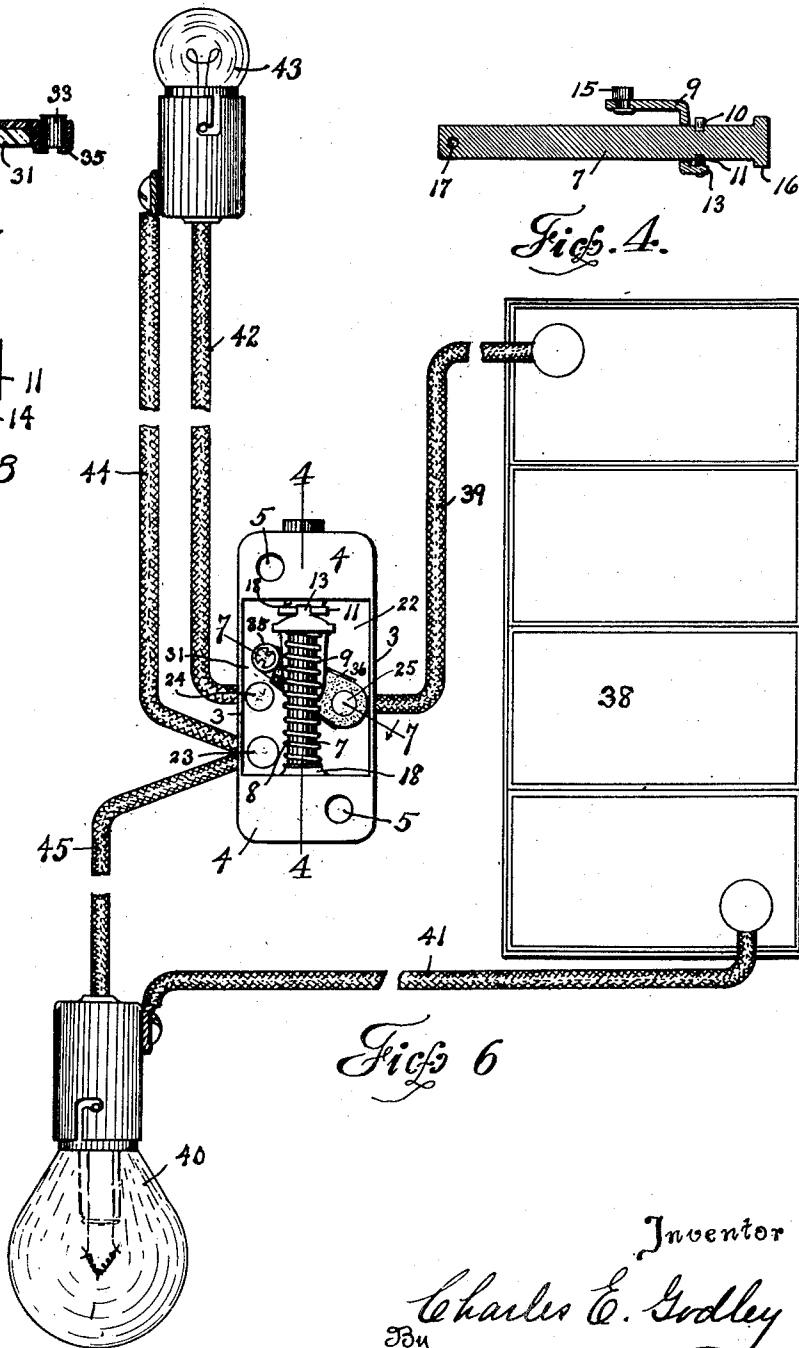


Fig. 6

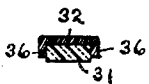


Fig. 5

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UNITED STATES PATENT OFFICE.

CHARLES E. GODLEY, OF DETROIT, MICHIGAN, ASSIGNOR TO EDMUNDS AND JONES CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF NEW YORK.

SWITCH.

Application filed October 21, 1922. Serial No. 595,993.

To all whom it may concern:

Be it known that I, CHARLES E. GODLEY, a citizen of the United States, and residing at Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Switch, of which the following is a specification.

This invention relates to current controlling devices for electric lamps and particularly to such devices for the so-called "stop" lamps of motor vehicles, which are mounted on the rear ends of the vehicles to indicate intention to slacken speed, turn or stop, and its object is to provide a switch adapted to close a lamp circuit upon the actuation of a brake or clutch pedal and also upon the shifting of the driving gears of the vehicles to "reverse" position. A further object of this invention is to provide a switch of this character with a plurality of circuits whereby current may at first be conveyed to a test or tell-tale lamp and thereafter to a signal lamp so that the operator may be informed as to the condition of such circuits.

This invention consists in a switch embodying a case and a stem slidable therein and spring-held in normal position, a contact member pivotally mounted therein and adapted to be swung to consecutively engage a pair of stationary contacts, a conductor connecting a current source to said movable contact, a test lamp and a signal lamp, and circuit wires connecting the test lamp to one of the stationary contacts and both of the lamps to the other contact so that the two lamps may be connected in series to the current source and thereafter the signal lamp may be alone thus connected. It further consists in an arm mounted on said stem and engaging the spring thereon and one side of the pivoted contact member so that the spring will press the pivoted member against the stationary contacts. It also consists in connected levers for actuating said stem whereby the switch may be operated by a plurality of actuating devices. It also consists in the details of construction illustrated in the accompanying drawings and particularly pointed out in the claims.

In the accompanying drawings, Fig. 1, is a plan of this improved current controlling mechanism mounted on the gear box of one type of automobile. Fig. 2 is a front elevation thereof. Fig. 3 is a section on the line 3—3 of Fig. 1. Fig. 4 is a section on the

line 4—4 of Fig. 6. Fig. 5 is a section on the line 5—5 of Fig. 7. Fig. 6 is a circuit diagram, the switch being shown in bottom plan. Fig. 7 is a section on the line 7—7 of Fig. 6. Fig. 8 is an elevation of a washer.

Similar reference characters refer to like parts throughout the several views.

The switch comprises a body having a top 1, ends 2, sides 3 and flanges 4 having holes 5 to receive screws 6 by means of which the switch may be secured in position. Slidable in holes in the ends 2 is a stem 7 which carries the spring 8 and the operating arm 9. The stem is formed with a circumferential groove 10 to receive the washer 11 (Fig. 8) which is slotted so it will slide onto the stem. The arm 9 has a finger 13 which extends into the notch 14 in this washer to hold the washer in position on the stem, the washer also acting as a pivot for the arm 7 which is loose on the stem. This arm carries a pin 15 at its end and the action of the spring 8 is to swing this pin away from the stem, or upward in Fig. 4. The stem is shown formed with a head 16 at one end and a hole 17 at the other for reasons which will develop later on. The ends 2 are so punched for the stem 7 as to form the flanges 18 which constitute bearings of proper length. The arm 9 is preferably formed with the transverse ridge 19 so that the pressure of the spring 8 will swing the arm 9 on the tongue 13 as a pivot and press the pin 15 toward the top of the case.

Plates 21 and 22 of insulating material are attached to the top 1 by means of two stationary contacts 23 and 24 and the pivot 25 of a movable contact, these attaching devices also acting as binding posts for the circuit wires. The holes in the top 1 are larger than those in the plates 21 and 22. The stationary contacts are preferably formed of short lengths of round metal whose outer ends are drilled and tapped to receive screws 26 and 27 respectively, and whose inner ends are reduced to extend through holes in the plates 21 and 22 and are then riveted over to secure the plate in position. The holes in the top 1 are enough larger to avoid all danger of short circuiting.

The pivot 25 has reduced upper and lower ends separated by the flange 28. The upper end of the pivot is drilled and tapped for the binding screw 29 and is also riveted over to secure the pivot to the insulating

plates. The lower end extends through the hole 30 in the movable contact 31 (Fig. 7) which is formed with an upper layer 32 of metal adapted to contact with the pivot 25 and is also provided with a socket 35 to receive the carbon brush 33 adapted to contact with the stationary contacts 23 and 24. The pin 15 on the arm 9 extends into the hole 34 in the body of this pivoted contact but as this body is of insulating material no current passes to this pin and arm. The hole in the metal 32 is preferably larger to avoid short circuiting. The arm 9 presses the pivoted contact against the pivot 25 and against the plate. Both layers of this pivoted contact engage the pivot and I form small flanges 36 along the edges of the metal layer to extend over the edges of the insulating layer to cause the two layers to swing as a unit. When the stem is moved in against the force of the spring, the movable contact first closes the circuit between the screws 29 and 27 and then between the screws 29 and 26.

So-called "stop" lights are coming into favor, especially for use on closed vehicles, and have proven themselves to be very convenient. But occasionally, the light bulb burns out or is broken, and the driver, relying on the signal light, fails to extend his arm to signal his intention to stop or turn and a serious accident results.

The present invention embodies a test or tell-tale lamp on the instrument board or at any other convenient position, which may be mounted on a fender on the cowl which also may be seen from the front, in circuit with the signal lamp which informs the driver at all times whether the signal lamp is in working condition, and as the test lamp may have much lower resistance than the signal lamp, the test lamp will burn brightly at each closing of the circuit through both lamps.

In Fig. 6 the current source is a storage battery 38 which connects to the pivot 25 of the movable contact 31 by the wire 39 and connects to the signal lamp 40 by means of a wire 41 when a two wire system is used. The frame of the vehicle may be employed for the return in place of the wire 41 if desired. The wire 42 leads from the contact 24 to the test lamp 43, the wire 44 connects this test lamp to the contact 23 and the wire 45 connects this contact 23 to the signal lamp 40. When the stem 7 is pushed in against the pressure of the spring 8 to cause the brush 33 to slide over the contact 24, current passes by way of wire 39, pivot 25 pivoted contact 31, stationary contact 24 and wire 42 to the test lamp 43, then by way of wire 44, stationary contact 23, wire 45, and lamp 40 to the battery, the low resistance lamp 43 flashing and the high resistance lamp 40 merely glowing. Continued

movement of this stem disengages the brush 33 and stationary contact 24 and brings this boss into engagement with the stationary contact 23 so that current will pass directly to the lamp 40 which now burns brightly. If the lamp 40 were lost, burned out or broken, the circuit of the lamp 43 would not be closed and no flash would there be seen. The driver would then know that his signal light is not operating. Substantially the same wiring may be used for all types of vehicles and it is therefore only shown in Fig. 6.

In Figs. 1 and 2, the case 50 for the "change-speed" gearing of a vehicle, usually known as the "gear box" is shown, and in it is mounted a slidable rod 51 which operates the "low" and "reverse" gears and in this particular type of vehicle is slid forward in the direction of the arrow 52 in Fig. 1 from neutral to "reverse" position. This gear box has a flange 53 which may be secured to the frame of the vehicle or to a part of the engine by screws 54, one of which is employed to attach the bracket 55 to this flange. This bracket contacts along one edge with the side of the gear box and has a perforated foot 56 which is secured to the flange 53 by the screw 54. The switch is secured to this bracket by the screws 6. The bracket has two arms 57 and 58 at its front end on which are the pivots 59 and 60 for the levers 61 and 62.

These two levers are so proportioned and positioned that their inner ends engage the head 16 of the stem 7. The lever 61 has a lip 64 extending down in contact with the front end of the rod 51 so that when this rod is moved to "reverse" position, the stem 7 is pushed in to close the circuits. The inner end of this lever 61 is preferably formed with an opening 65 to receive a tongue 66 extending down from the inner end of the lever 62. A stiff spring 67 is shown to connect the outer end of the lever 62 to the pin 68 which connects the arm 69 of the brake pedal to the connecting rod 70. It is evident that this spring may be connected to the clutch pedal as well. At each actuation of the pedal therefore, the lever 62 will be swung to push in the stem 7 and close the circuits to the test and signal lamps. Any excessive movement of the pedal arm 69 merely opens the spring.

The details of construction and the proportions of the parts of this switch and its operating mechanism may all be varied by those skilled in the art to adapt the invention to engines of different types without departing from the spirit of my invention as set forth in the following claims:

I claim:

1. A switch comprising a slidable stem and supports therefor, an insulating plate parallel to the line of said stem, a pivot and

two stationary contacts carried by the plate, a movable contact mounted on the pivot, an arm on the stem and a pin at the end of the arm engaging in a hole in the movable contact, and a spring to return the stem to normal position and to press the movable contact against said plate. 70

2. A switch comprising a slidable stem and supports therefor, an insulating plate adjacent the stem, stationary contacts carried by the plate, a movable contact adjacent the plate and adapted to move across said contacts alternately, an arm on the stem and means to connect the arm to the movable contact, and a spring to return the stem to normal position and to press the end of the arm on the stem against the movable contact member. 75

3. A switch comprising a case having a top and ends, a stem slidable in the ends, stationary contacts and a pivot mounted in the top of the case, and insulated from each other, and pivot, a movable contact member mounted on the pivot and adapted to be moved to engage said stationary contacts alternately, an arm on the stem and insulating means to connect the arm to said movable contact, and a spring mounted on the stem between an end of the case and said arm to return the stem to normal position and to press the movable contact against the top of the case. 80

4. A switch comprising a case having a top and ends, a stem slidable in the ends, stationary contacts and a pivot mounted in the top of the case, and insulated from each other, and pivot, a movable contact member mounted on the pivot and adapted to be moved to engage said stationary contacts alternately, an arm on the stem and insulating means to connect the arm to said movable contact, and a spring mounted on the stem between an end of the case and said arm to return the stem to normal position and to press the movable contact against the top of the case, said arm having an opening to receive the stem and a transverse ridge to engage the spring. 85

5. A switch comprising a case having a top and ends, a stem slidable in the ends, a plate of insulating material lying against the inside surface of the top, stationary contacts and a pivot mounted in said plate and insulated from each other thereby, a movable contact mounted on the pivot and adapted to slide on the insulating plate over the stationary contacts, a washer attached to said stem, an operating arm having an eye between its ends through which the stem extends and having one end in pivotal engagement with the washer on one side of the stem and the other end in engagement with the movable contact on the other side of the stem, a pin in the end of the arm and a hole therefor in the movable contact constituting the engagement between the arm and contact, and a coil spring on the stem to return it to normal position and to press the movable contact member and the adjacent end of the operating arm toward the insulating plate. 90

6. A switch comprising a case having a top and ends, a stem slidable in the ends, a plate of insulating material lying against the inside surface of the top, stationary contacts and a pivot mounted in said plate and insulated from each other thereby, a movable contact mounted on the pivot and adapted to slide on the insulating plate over the stationary contacts, a washer attached to said stem, an operating arm having an eye between its ends through which the stem extends and having one end in pivotal engagement with the washer on one side of the stem and the other end in engagement with the movable contact on the other side of the stem, a pin in the end of the arm and a hole therefor in the movable contact constituting the engagement between the arm and contact, and a coil spring on the stem to return it to normal position and to press the movable contact member and the adjacent end of the operating arm toward the insulating plate, said movable contact member comprising metallic and insulating parts, of which the metallic electrically connects the pivot to the stationary contacts and the insulating part receives the pin on the operating arm. 95

7. In a switch, the combination of a bracket, a switch case mounted therein, a stem slidable in the case, a pair of stationary contacts and a movable contact in the case and means to insulate the contacts from each other and from the case and stem, means connected to the stem to cause the movable contact to engage the stationary contacts alternately when the stem is moved longitudinally in one direction, and a pair of levers pivoted on the bracket and adapted to engage the stem to move the same to operatively actuate the movable contact. 100

8. In a switch, the combination of a bracket, a switch case mounted therein, a stem slidable in the case, a pair of stationary contacts and a movable contact in the case and means to insulate the contacts from each other and from the case, means connected to the stem to cause the movable contact to engage the stationary contacts alternately when the stem is moved longitudinally in one direction, a plurality of independently actuated means for sliding said stem in one direction, and a spring to return the stem. 105

9. A switch comprising a case, a stem slidable therein, a stationary contact and a pivot mounted in one side of the case and insulated therefrom, a movable contact mounted on said pivot, an arm on the stem connecting to said movable contact, and means to 110

press the arm against the movable contact and the movable contact against said side of the case.

10. A switch comprising a case, a stem
5 slidable therein, a stationary contact mounted in one side of the case, a movable contact within the case adapted to move into and out of engagement with the stationary contact, an arm mounted on the stem and
10 connecting to the movable contact, and a spring mounted on the stem in engagement with said arm and adapted to return the stem to normal position and to press the arm against the movable contact and the
15 movable contact against said side of the case.

11. A switch comprising a case having a top and ends, a stem slidable in the ends, a plate of insulating material lying against the inside surface of the top, a stationary
2 contact and a pivot mounted in said plate and insulated from each other thereby, a movable contact mounted on the pivot and adapted to be moved into and out of engagement with the stationary contact, an
2 arm on the stem and insulating means to connect the arm to said movable contact, and a spring to return the stem to normal position and to press the movable contact against the top of the case.

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