

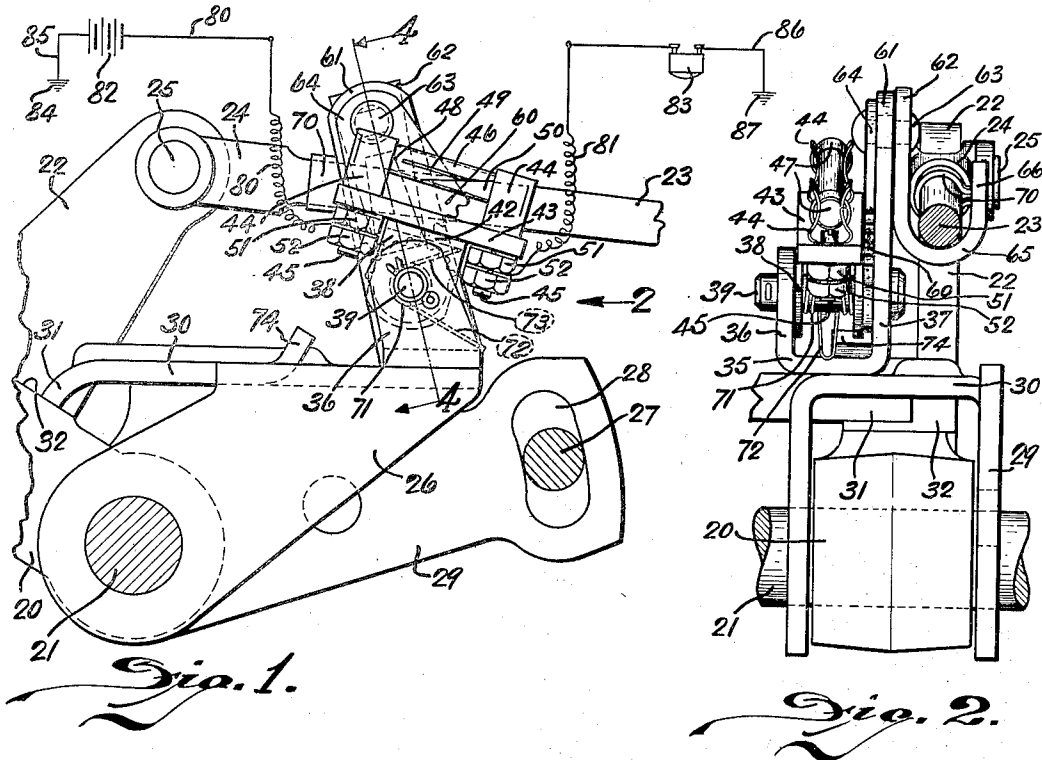
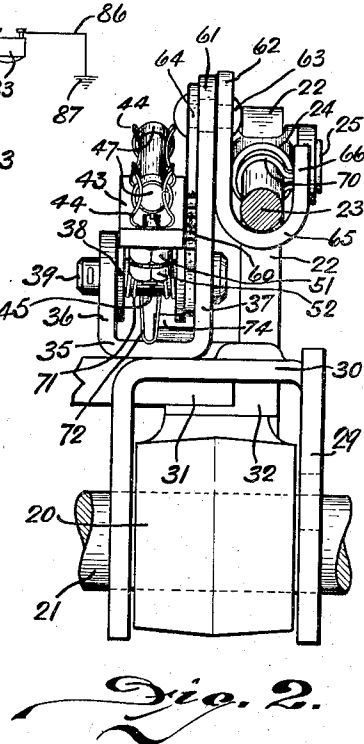
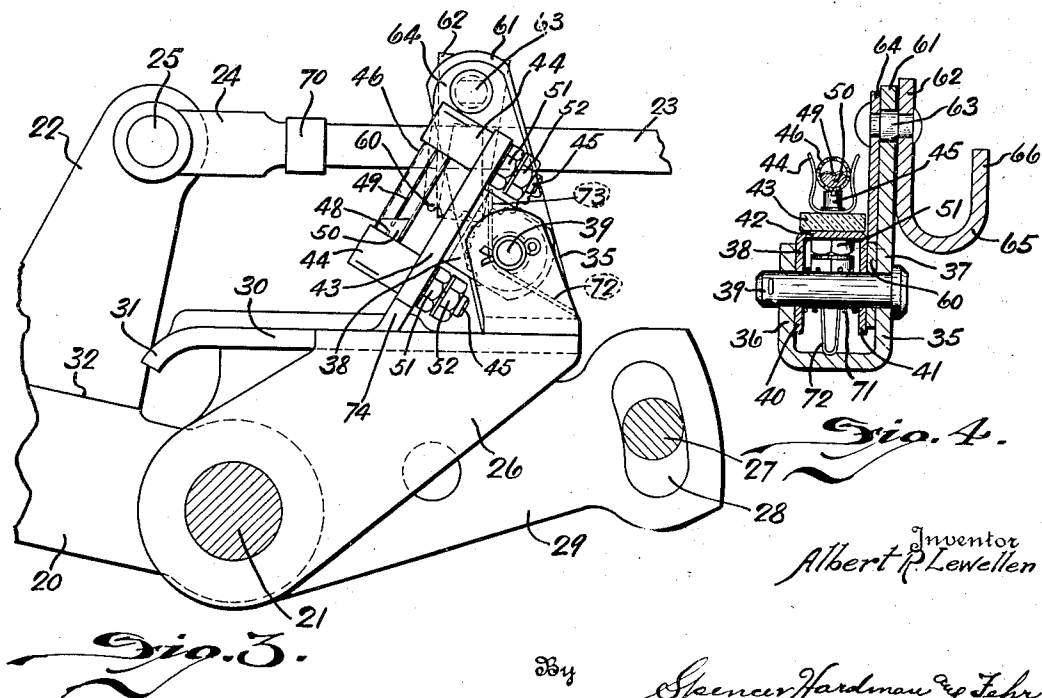
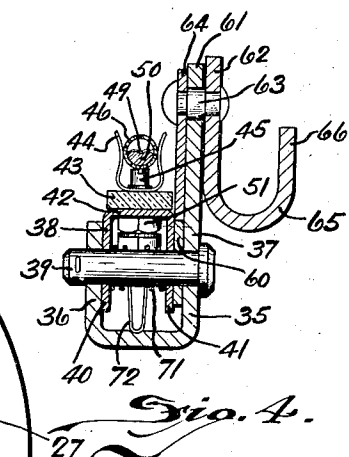
June 27, 1933.

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1,915,680

SWITCH

Filed June 12, 1930



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SWITCH

Application filed June 12, 1930. Serial No. 460,639.

This invention relates to circuit closers adaptable for signal circuits, and has for one of its objects to provide a switch and operating structure that will respond quickly to movement of a controller mechanism.

A further object of the invention is to provide and support a switch structure for efficient operation in response to a control mechanism.

A further object of the invention is to provide a circuit controller that will be readily responsive, and certain of operation, upon slight movement of the control mechanism.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred embodiment of one form of the present invention is clearly shown.

In the drawing:

Fig. 1 illustrates a switch device of the character described herein, and its application to the control mechanism and signal circuit of an automotive vehicle.

Fig. 2 is an end elevation of the structure substantially as indicated by the arrow 2 of Fig. 1.

Fig. 3 is a view similar to Fig. 1, except with the control mechanism moved to a different position, so as to permit the illustration of the circuit closer in a circuit closed position.

Fig. 4 is a transverse sectional view of the circuit controller and part of the operating mechanism, substantially as indicated by the line and arrows 4-4 of Fig. 1.

With particular reference to the drawing, 20 indicates a pedal member of the brake control mechanism, journaled by means of a shaft 21 to the frame of an automotive vehicle, and providing an offset arm 22 to which is secured a brake rod 23 by a yoke member 24 through the agency of a pin 25. It is understood of course, that the rod 23 may be coupled to any conventional or desired form of brake operating mechanism, or such other control means as may be desired, and that manipulation of the pedal 20 will operate to reciprocate the rod 23 as is well known to those skilled in the art. A pedal stop 26 is

also carried by the shaft 21 and is capable of adjustment thereabout by reason of a bolt or other device 27 through elongated arc-like aperture 28 provided in one arm 29 of the pedal stop member. The pedal stop provides a table portion 30, one end of which terminates in a depending abutment or lug 31 adapted to engage a face 32 of the pedal 20, and it is thus seen that adjustment of the member 26 about the shaft 21 through the agency of the stud 27 will vary the angular position of the rest 31 with respect to the shaft 21.

On the table 30 of the pedal stop there is secured a switch bracket 35 by means of spot welding or the like, and is of the general form exhibited in the drawing. It is here illustrated as of U-form providing the parallelly extending legs 36 and 37, within which is journaled a switch support 38 by means of a journal pin 39. The switch support 38 is of inverted U-formation forming the legs 40 and 41 receiving the journal pin 39 and formed to engage between the legs 36 and 37 of the bracket. The legs of the support are joined by a bridge 42 providing a platform to which is secured a nonconducting block 43, and to the block 43 is secured at each end a spring retaining clip 44 by a terminal stud 45.

The clips 44 make provision for reception of a conductive fluid circuit closer 46 by means of the metallic caps 47. The circuit closer 46, in the form illustrated, is of the mercury type and provides contact terminals 48 and 49, each of which is in electrical communication with one of the caps 47, and electrical communication between the contact terminals is made through the agency of a globule of mercury 50 optionally movable to bridge the gap between the ends of the conductors 48 and 49. Nuts 51 and 52 or other equivalent devices operate to maintain the clips 44 in firm engagement with the terminal studs 45 and provide for making electrical connection therewith.

Means are provided for oscillating the support 38 and its attendant circuit closer mechanism by securing to the leg 41 of the support a sector gear 60, which when actuated will

oscillate the switch device about the pivot pin 39. The leg 37 of the bracket is elongated as illustrated, and to the free end 61 is pivoted a switch lever 62 by a pivot member 63 that also has driving engagement with a sector gear 64 as illustrated. The sector gear 64 is in interengaging or driving relation with the sector gear 60, and operates to drive the same upon oscillation of the switch lever 62. As here illustrated the switch lever 62 is substantially U-shaped in formation so as to provide the bight 65 joining the free end 66.

In the operative position as illustrated in Figs. 1, 2 and 3, the circuit closer is so mounted and supported by the pedal stop as to position the loop 65 of the switch lever in embracing relation with respect to the brake rod 23. That is, so that the brake rod will lie within and be capable of movement through the bight 65 of the said lever. A clamp collar 70 is secured about the rod 23 in a position so as to engage the lever 62 and oscillate the parts to the circuit open position when the brake pedal 20 is at rest against the stop 31. Thus, means are provided for actuating the switch device through reciprocation of the rod 23.

It is desirable to provide an operable connection between the control mechanism and the switch lever such that the control mechanism will be freely movable to the full extent that may be desired without obstruction from its mechanical connection with the switch, and yet to have the switch fully operable and immediately responsive to initial movement of the control mechanism. To accomplish this, a spring 71 is disposed about the pivot pin 39 and has angular extensions 72 and 73 that engages the bridge portion of the bracket 35 and the bridge of the support 42, respectively, so as to urge the circuit closer in a counterclockwise direction of rotation as viewed with respect to Figs. 1 and 3, or to the circuit closed position. This biasing of the spring 71 rotates the switch mechanism to the position illustrated in Fig. 3 in which the dielectric member 43 comes into engagement with a switch stop lug 74 also provided by the bridge piece 30 of the pedal stop member 26.

The switch mechanism thus constructed may be inserted in a signal or other circuit substantially as illustrated in Fig. 1, where the terminal members 45 are provided with leads 80 and 81 connecting with a battery 82 and indicating instrument or other work device 83 respectively. The battery may be grounded at 84 by a lead 85 which completes an electric circuit with the device 83 by a lead 86 grounded at 87. This completes an electrical circuit from the ground 84 to the ground 87 by way of the connections just described except for the gap between the terminals 48 and 49 of the circuit closer which

may be selectively opened or closed through oscillation of the circuit closer mechanism.

During a condition of rest it will be observed that the pedal 20 will engage against the rest or lug 31 and the clip 70 will be in engagement with the switch lever 62, which through its connection with the switch device by means of the segmental gears will oscillate the switch mechanism to the circuit open position against the resistance of the spring 71 as is illustrated in Fig. 1. Upon manipulation of the control pedal 20, it is moved away from the rest 31 and with it carries the clamp collar 70, which in moving toward the position illustrated in Fig. 3 allows the switch lever 62 to follow up and with it the parts of the switch mechanism to the extent illustrated. In so doing the spring 71 urges the switch device into a counterclockwise rotation as appears in Fig. 3, until the member 43 abuts against the stop 74. It requires but little movement of the pedal 20 to accomplish the extreme movement of the circuit closer, and yet after the circuit closer has been so moved, the pedal is free to move to any position beyond the circuit closing position to which the control mechanism may be adjusted. A structure is therefore provided that actuates a circuit closer mechanism in response to slight movement of a control mechanism, and a quick make-and-break of circuits across the conducting elements is thereby assured.

While the form of embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. A switch actuator mechanism comprising in combination, a pedal stop, a switch bracket carried by the pedal stop and providing aligned bearings, a switch support journaled for operation in the bearings, means carried by the bracket and operable upon the switch support, said pedal stop providing fixed abutments for the movement of the control pedal, and for the movement of the switch device, and means carried by the pedal mechanism in actuatable relation with the switch operating means.

2. An oscillatable switch comprising in combination, a pedal stop secured about the axis of the pedal shaft and providing a pair of stop lugs, a switch device carried by the pedal stop and supported in cooperable relation with a control rod of the pedal mechanism, means carried by the control rod operable to move the switch mechanism into engagement with one of said stop lugs, said pedal mechanism normally being in engagement with the other of said stop lugs.

3. A signal circuit switch comprising in combination, a supporting table having a stop depending therefrom; a bracket carried

- by said table; a circuit closing device oscillatably mounted on said bracket and adapted to engage said stop limiting the oscillation of said device in one direction on one side of
- 5 a pivotal point; a control rod; means carried by said control rod cooperable with said switch device for normally maintaining said switch device in circuit open position; and means engaging said switch device and said
- 10 bracket for urging said switch device past said pivotal point into engagement with said stop to close a circuit when said control rod releases said switch device from said normal position.
- 15 4. A switch actuator mechanism comprising in combination; a pedal; a pair of stop lugs; a control rod connected to said pedal; a switch device oscillatably supported and in cooperable relation with said rod; means
- 20 carried by said switch device operable to move the switch device into engagement with one of said stop lugs upon movement of said pedal, said pedal normally being in engagement with the other of said stop lugs.
- 25 5. A switch actuator mechanism comprising in combination; a pedal; a pair of stops; a control rod connected to said pedal; a switch device oscillatably supported and in cooperable relation with said rod; and means responsive to the movement of the rod by
- 70 said pedal to move said switch device into engagement with one of said stops, said pedal normally being in engagement with the other of said stops.
- 75 6. A switch actuator mechanism comprising in combination; a pedal; a pair of stops; a switch device; means journalling said switch device and supporting same in co-operable relation with a rod connected with
- 80 said pedal; means carried by said rod operable to hold said switch device in circuit open position when said pedal is normally in engagement with one of said stops; and means responsive to the movement of said pedal
- 85 to urge said switch device into engagement with the other of said stops to close a circuit.
- In testimony whereof I hereto affix my signature.
- ALBERT R. LEWELLEN.
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