April 25, 1933. H. E. NORVIEL 1,906,085

ELECTRIC SWITCH

Filed April 13, 1932

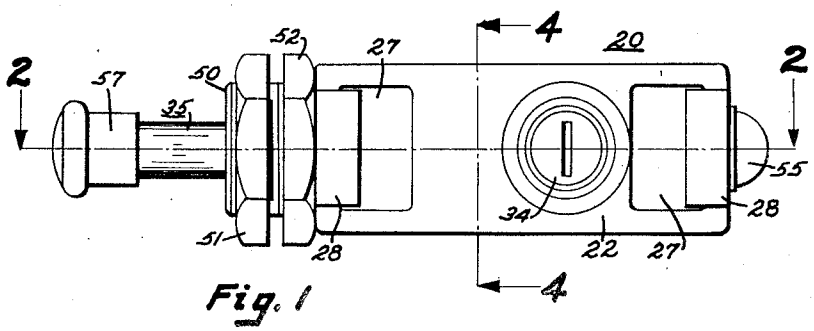


Fig. 1

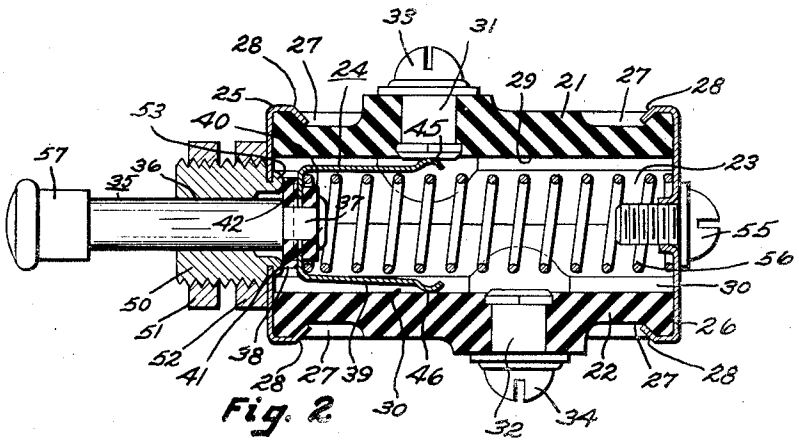


Fig. 2

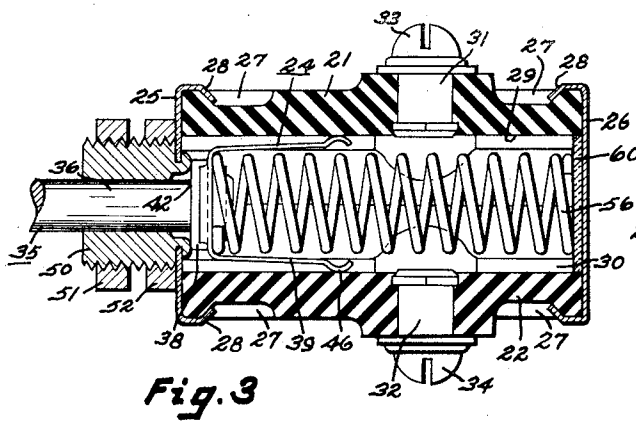


Fig. 3

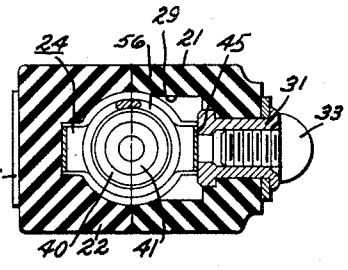


Fig. 4

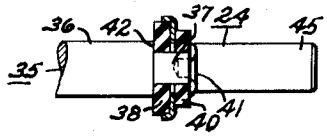


Fig. 5

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UNITED STATES PATENT OFFICE

HARRY E. NORVIEL, DECEASED, LATE OF ANDERSON, INDIANA, BY ANDERSON BANKING COMPANY, EXECUTOR, OF ANDERSON, INDIANA, ASSIGNOR TO DELCO-REMY CORPORATION, OF ANDERSON, INDIANA, A CORPORATION OF DELAWARE

ELECTRIC SWITCH

Application filed April 13, 1932. Serial No. 605,093.

This invention relates to circuit-closers and more particularly to circuit closers of the push-rod type.

One object of the present invention is to provide a switch having a push-rod to actuate a switch mechanism for controlling different lighting circuits to illuminate the faces of different indicating devices mounted upon the instrument board of an automotive vehicle, and of such construction that on the actuation of the push-rod from its normal position will effect the operation of the switch mechanism movable to a different circuit position to illuminate an indicating device unreadable in the dark and that the release of the push-rod will automatically return the switching mechanism to its normal position.

Another object of the present invention is to provide a switch in the form of a two-piece housing whose parts have an edge portion that meet in a plane that includes the axis of the push-rod, and in which the stationary contacts are supported in separate blocks and disposed at opposite sides of a continuation of the axis of the push-rod which carries a circuit-closer, so that the blocks that form the housing may be assembled in several positions and permit the push-rod to be used with all of the different assembled positions of the blocks.

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 is a side elevation of a switch in which my invention is embodied in one form.

Fig. 2 is a section taken on the line 2—2 of Fig. 1.

Fig. 3 is a section taken on the line 3—3 of Fig. 1.

Fig. 4 is a sectional view of a modified form of the switch.

Fig. 5 is a detail sectional view through the circuit closer taken on the line 5—5 of Fig. 3.

Referring to the drawing, a switch 20 comprising a two-piece insulating housing formed by blocks or sections 21 and 22 of the same external and internal contours, and when the blocks are assembled they will form a bore or chamber 23 for a circuit closer assembly 24. A pair of clip or clamping members 25 and 26 are provided that secure the blocks together and provide end closures for each end of the chamber 23. The ends of the clip members 25 and 26 are clinched into recesses or notches 27 provided on the other surfaces of the blocks 21 and 22, as at 28, to hold the blocks and clip members in assembled relation.

Each block 21 and 22 is provided with an internal groove 29 and 30 respectfully, and have moldably secured therein, stationary contacts 31 and 32, respectively, which partly project from the bottom surface of the grooves. The contacts 31 and 32 pass through their respective blocks to receive binding screws 33 and 34 by which lead wires are connected to the switch. When the blocks 21 and 22 are assembled together, the grooves 29, 30 and contacts 31, 32 will be approximately on opposite sides of the line of division between the blocks.

The circuit closer assembly comprises a push-rod 35, the rod being provided with an enlarged portion 36 and a reduced portion 37. The reduced portion 37 has mounted thereon an insulating washer 38, a U-shaped contact member 39, and a non-conducting washer 40. The elements 38, 39 and 40 are secured on the reduced portion 37 by deforming a portion of the rod 35, as at 41, so that the washer 38 will bear against a shoulder 42 formed on the rod 35. The circuit closer is provided with resilient tongues 45 and 46 and under sufficient tension to retain them within the grooves 29 and 30 respectively. This insures good electrical connection between the contact 31, 32 and tongues 45, 46 of the circuit closer and also provides means for preventing rotation of the tongues within the chamber 23. The grooves also act as guides for the tongues when the circuit-closer assembly 24 is moved from one position to another. During the movement of the circuit-closer, the tongues always tend to flex outwardly for frictional engagement with a surface, thus causing a rubbing action,

which keeps the engaged surfaces of each contacting surface clean.

The rod which carries the circuit-closer assembly and which is shifted from one position to another is slidably supported by a hollow bushing 50. A pair of clamping nuts 51 and 52 are threaded upon the bushing and affords means for clamping the bushing 50 in place upon an instrument board or any other suitable support (not shown). The bushing 50 is supported upon the clip member 25. This is accomplished by providing the bushing 50 with a reduced portion that extends through an aperture in the clip member 25 and spun over, at 53, on the rear surface of the member 25 to hold firmly the bushing 50 to the clip member 25.

A terminal is formed by a conducting screw 55 which engages the clip member 26. A coiled spring 56 is interposed between the clip member 26 and the U-shaped contact member 39 so that a circuit is maintained from the terminal 55 through clip member 26, spring 56, contact member 39 and the terminal 31. The spring normally holds the circuit-closer assembly 24 in the position shown in Fig. 2 and thus a circuit is closed through the tongue 45 to the terminal 31. When the rod 35 is depressed and the knob 57 approximately touches the bushing 50, another circuit is closed through the tongue 46 to the terminal contact 32 connected with a lamp that will illuminate the face of an indicating device mounted in any suitable place within sight of the operator.

A modification of the invention is shown in Fig. 5. The blocks 21 and 22 may be assembled so that the terminal 31 and 32 may be substantially opposite each other. In this form the spring 56 is insulated from the clip member 26 by a washer 60. In this arrangement the terminal contact 34 may be connected with the battery and the terminal contact 33 is connected by a lead to a lamp or other suitable device (not shown).

If it be desired, the insulating washer may be eliminated and the terminal screw connected with the battery so that when the circuit-closer is actuated to the right as viewed in Fig. 5, a plurality of circuits may be completed.

It will thus be seen that there has been provided in this invention a push-rod switch construction, in which the housing member is so constructed and arranged that a plurality of switches of different circuit combinations may be had by the rearrangements of parts. The construction is of marked simplicity, the several parts are readily and reliably assembled and moreover, the entire construction lends itself to quantity production.

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. An electric switch comprising in combination; a housing comprising a pair of blocks recessed at their adjacent faces to form a chamber provided with a plurality of internal grooves; terminals insulatingly supported by the blocks and extending into the grooves; end members for securing said blocks together; an actuator slidably supported by one of said end members; a contact member provided with resilient tongues, said contact member being insulatingly carried by said actuator and the tongues extending into and slidable within the grooves; and means for moving the contact member in circuit connection with a terminal.

2. An electric switch comprising in combination; a housing comprising a pair of blocks recessed at their adjacent faces to form a chamber; terminals insulatingly supported by said blocks at different positions in said chamber; end members for securing said blocks together, one of said ends forming a terminal; an actuator slidably supported by the other end member; a contact member insulatingly carried by said actuator; means to prevent rotation of said contact member within said chamber; a coiled spring resting on said end terminal and in electrical engagement therewith and with said movable contact; and means for connecting said movable contact from one circuit position to another circuit position.

3. An electric switch comprising in combination; a housing comprising a pair of blocks recessed at their adjacent faces to form a chamber; stationary contacts supported by said blocks and disposed in said chamber on each side of the line of division at different elevations thereof; terminals insulatingly supported by the blocks; an actuator; a contact member insulatingly carried by said actuator; a coiled spring electrically connecting said terminals with said movable contact to hold same in a circuit closed position and means for moving said actuator to move said contact member from said circuit-closed position to another circuit closed position.

4. An electric switch comprising in combination; a housing comprising a pair of non-conducting sections recessed at their adjacent faces to form a bore with a plurality of internal grooves substantially diametrically opposite each other; a terminal supported by each section and projecting into the grooves; a plurality of end walls holding said sections together and providing closures for each end of said bore; a movable contact assembly slidably supported by one of said end closures, said contact assembly having tongues extending into and slidable within the grooves; and means for moving the contact assembly in circuit with the terminals.

5. An electric switch comprising in combination; a housing comprising a pair of insulating blocks recessed at their adjacent faces; means for holding said blocks together to form a longitudinal bore through said housing, said housing having spaced grooves substantially parallel to the axis of said bore; a terminal mounted on each block forming contact points within said grooves; and a contact actuator assembly within said housing, said actuator having means for engaging the grooves to prevent the actuator from rotary movement within said casing and to make circuit connection with said terminals.

6. An electric switch comprising in combination; a housing comprising a pair of insulating blocks recessed at their adjacent faces; means for holding said blocks together forming a bore through said housing, said housing having spaced grooves substantially parallel to the axis of said bore; a terminal mounted in each block and forming a contact point set at different location with respect to each other within their respective groove; a contact actuator assembly within said housing, said assembly having a bridging member engaging said grooves, said grooves perventing said bridging member from rotating with said housing; and means for urging the contact actuator into circuit closed relation with respect to said terminals.

7. A switch housing comprising a pair of insulating blocks recessed at their adjacent faces to form a chamber; means for holding said blocks together, said means comprising a pair of clip members to close each end of said chamber, one of said members forming a terminal; a rod slidably supported by the other end member, said rod carrying a circuit closing means within said chamber; a spring resting on said terminal member and in electrical engagement with said circuit closing means; a stationary terminal supported by each of said blocks set at different points in said chamber and normally cooperating with one of said stationary contacts to close a circuit; and means operable to connect another stationary contact with said circuit closing means.

8. An electric switch comprising in combination; a housing comprising a pair of non-conducting sections recessed at their adjacent faces to form a bore with a plurality of internal grooves substantially diametrically opposite each other; a terminal supported by each section and projecting into the grooves in opposed relation; a plurality of end walls holding said sections together and providing closures for each end of said bore; a movable contact assembly slidably supported by one of said end closures, said contact assembly having tongues extending into and slidable within the grooves to bridge the terminals; and means for moving the contact assembly in circuit with the terminals, including means urging the contact assembly to terminal disengaging position.

In testimony whereof is hereto affixed the signature of

ANDERSON BANKING COMPANY,
Executor of the Estate of Harry E. Norviel, Deceased.

By LINFIELD MYERS,
President.