

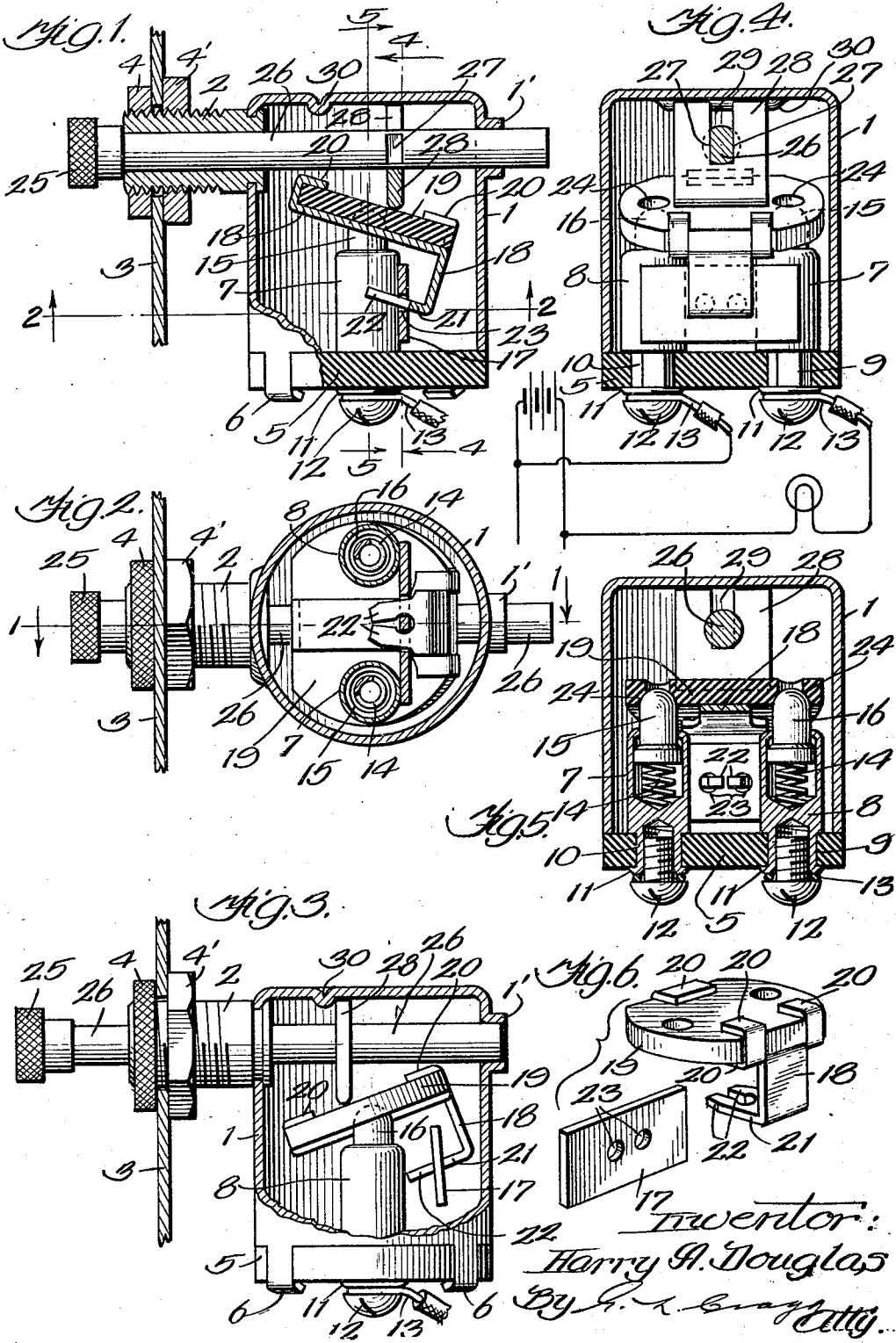
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ELECTRIC SWITCH

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UNITED STATES PATENT OFFICE

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ELECTRIC SWITCH

Application filed December 21, 1927. Serial No. 241,640.

My invention relates to electric switches of the type disclosed in my application Serial Number 233,874, filed November 17, 1927. The switch disclosed in the aforesaid application employs two abutments of which at least one and preferably each is in the form of a spring barrel and of which at least one is a current conducting contact, a spring in each spring barrel, a bar for separable engagement with said abutments and having a contact thereon complementary to the aforesaid contact, a carrier for said bar and having flexible connection therewith at a place between said abutments, the springs in the barrels being adapted to press upon said carrier in a direction to engage the bar with the abutments, a fulcrum for said carrier, and a rotatable handle coupled with the fulcrum and serving to shift the fulcrum from either side to the other of the spring to enable such spring to move the bar into and out of engagement with the abutments.

In accordance with my present invention, I couple the fulcrum with a reciprocable or longitudinally movable handle which determines the location of the fulcrum with respect to the carrier.

The invention will be fully explained in connection with the accompanying drawing in which Fig. 1 is a sectional view illustrating the preferred embodiment of the invention, the switch shown being closed; Fig. 2 is a sectional view on line 2—2 of Fig. 1; Fig. 3 is a view somewhat similar to Fig. 1 but showing in elevation parts that appear in section in Fig. 1 and also illustrating the switch in open position; Fig. 4 is a sectional view on line 4—4 of Fig. 1; Fig. 5 is a sectional view on line 5—5 of Fig. 1; and Fig. 6 illustrates the carrier and the contact bar operable thereby in separated relation.

The switch structure illustrated includes a cup-shaped metallic casing member 1 which is carried by one end of an exteriorly threaded bushing 2 that is secured to the dash board or other mounting 3 by means of two nuts 4 and 4' screwed upon the bushing and clamping the dash board therebetween. A disc of insulation 5 closes the cup, this disc being held against the rim of the cup by means of

clips 6 which enter recesses in the disc and are clinched over the disc. Two current conducting abutments 7 and 8 are disposed within the casing, these abutments being desirably in the form of metallic spring barrels having reduced extensions 9, 10 which pass through the disc and which are riveted at their outer ends against the outer face of the disc, as indicated at 11. Binding screws 12 serve to clamp current conducting wires 13 into mechanical and electrical assembly with the spring barrels. Metallic coiled springs 14 are received within the spring barrels as are also the inner ends of the plungers 15 and 16 which are engaged by the springs that press outwardly thereon.

A bar 17 is adapted to have engagement with both abutments 7 and 8, this bar having thereon a current conducting contact complementary to each of said abutments. In the preferred embodiment of the invention, said bar is metallic throughout, the portions thereon which are engageable with the abutments being integrally formed therewith. Said bar is flexibly connected with a carrier which is preferably inclusive of a metallic plate 18 and a block of insulation 19 which is clinched upon the plate by the clips 20. Said plate has an extension 21 which is angularly turned at its end where the plate is bifurcated, as indicated at 22. The bar 17 is formed with holes 23 therethrough which receive the bifurcated portions of the plate 18, these portions being brought together after they are passed into said holes, as indicated in Fig. 2, whereby the bar is permanently assembled with its carrier. The holes 23 are sufficiently large to enable the bar to swivel or have universal movement upon the carrier to an extent which is sufficient to permit the bar to have firm and extended contact with the contact abutments 7 and 8 whereby the bar is enabled to establish effective low resistance connection between said contacts to close the circuit that contains them. It is obvious that the invention need not be limited to a construction wherein both abutments 7 and 8 are current conducting contacts since the bar 17 may be permanently coupled with

one side of the circuit, as will be readily understood by those skilled in the art.

The block of insulation 19 is formed with flaring recesses 24 which receive the outer, rounded ends of the spring pressed plungers 15 and 16. A longitudinally movable or reciprocable handle 25 has a reduced stem portion 26 which is received in the bore of the bushing 2 and is slidable therein at one side of the casing member, this stem being also guided by the guide formation 1' that receives the inner end of the stem. Two diametrically opposite slots 27 are cut in the handle stem. An upright rectangular fulcrum forming plate or block 28 is formed with a notch or deep slot 29. This plate is assembled with the handle stem, the parts of the stem between the slots 27 being received in the slot 29 and the longer margin of slot 29 being received in the slots 27. Said handle and plate are thus kept from relative rotation. The block of insulation 19 is pressed by the springs 14 against the rounded bottom edge of fulcrum plate 27 which, in turn, has its top edge pressed against the upper, end, wall of the metallic cup shaped casing member 1 which holds the fulcrum plate 27 and handle from turning together, to keep the mischievous from tampering with the switch. The lower and rounded edge of plate 27 constitutes the fulcrum edge on which the carrier turns, the fulcrum being shifted from one side to the other of the places where the springs 14 have effective pressure upon block 19 through the intermediation of the plungers 15 and 16. When the handle is in the innermost position shown in Fig. 1, the springs 14 are effective to turn the carrier to bring the contacting bar into engagement with the contacts 7 and 8. When the handle is adjusted to the outermost position shown in Fig. 3, the plungers are upon the other side of the fulcrum to enable the springs to reverse the movement of the carrier and the contacting portion 17 thereon to open the circuit. The knob portion of the handle defines the innermost position of the fulcrum and the hump 30 on casing member 1 constitutes an abutment for the plate 28 to define the outermost position of the fulcrum.

Changes may be made without departing from the invention.

Having thus described my invention, I claim:

1. In an electric switch, the combination with two abutments of which one is a current conducting contact and one is in the form of a spring barrel; of a spring in said spring barrel; a bar for separable engagement with said abutments and having a contact thereon complementary to the aforesaid contact; a carrier for said bar and having flexible connection therewith at a place between said abutments, the spring in the barrel pressing upon said carrier; a fulcrum for said car-

rier; and a longitudinally movable handle coupled with the fulcrum and serving to shift the fulcrum from either side to the other of the spring to enable such spring to move the bar into and out of engagement with the abutments.

2. In an electric switch, the combination with two abutments of which one is a current conducting contact and each of which is in the form of a spring barrel; of a spring in each spring barrel; a bar for separable engagement with said abutments and having a contact thereon complementary to the aforesaid contact; a carrier for said bar and having flexible connection therewith at a place between said abutments, the springs in the barrels pressing upon said carrier; a fulcrum for said carrier; and a longitudinally movable handle coupled with the fulcrum and serving to shift the fulcrum from either side to the other of the springs to enable such springs to move the bar into and out of engagement with the abutments.

3. In an electric switch, the combination with a current conducting contact in the form of a spring barrel; of a contact complementary to the aforesaid contact; a spring in said barrel and serving to press said complementary contact into engagement with the first contact; and a longitudinally movable switch handle operable upon the complementary contact to separate it from the first contact.

4. In an electric switch, the combination with a contact; of a carrier having a contact thereon that is complementary to the aforesaid contact; a fulcrum upon which said carrier may be turned, said carrier being spring pressed to effect turning movement thereof; and a longitudinally movable handle coupled with the fulcrum and serving to shift the fulcrum to one side or the other of the place of effective spring pressure to open or close the switch.

In witness whereof I hereunto subscribe my name.

HARRY A. DOUGLAS.