

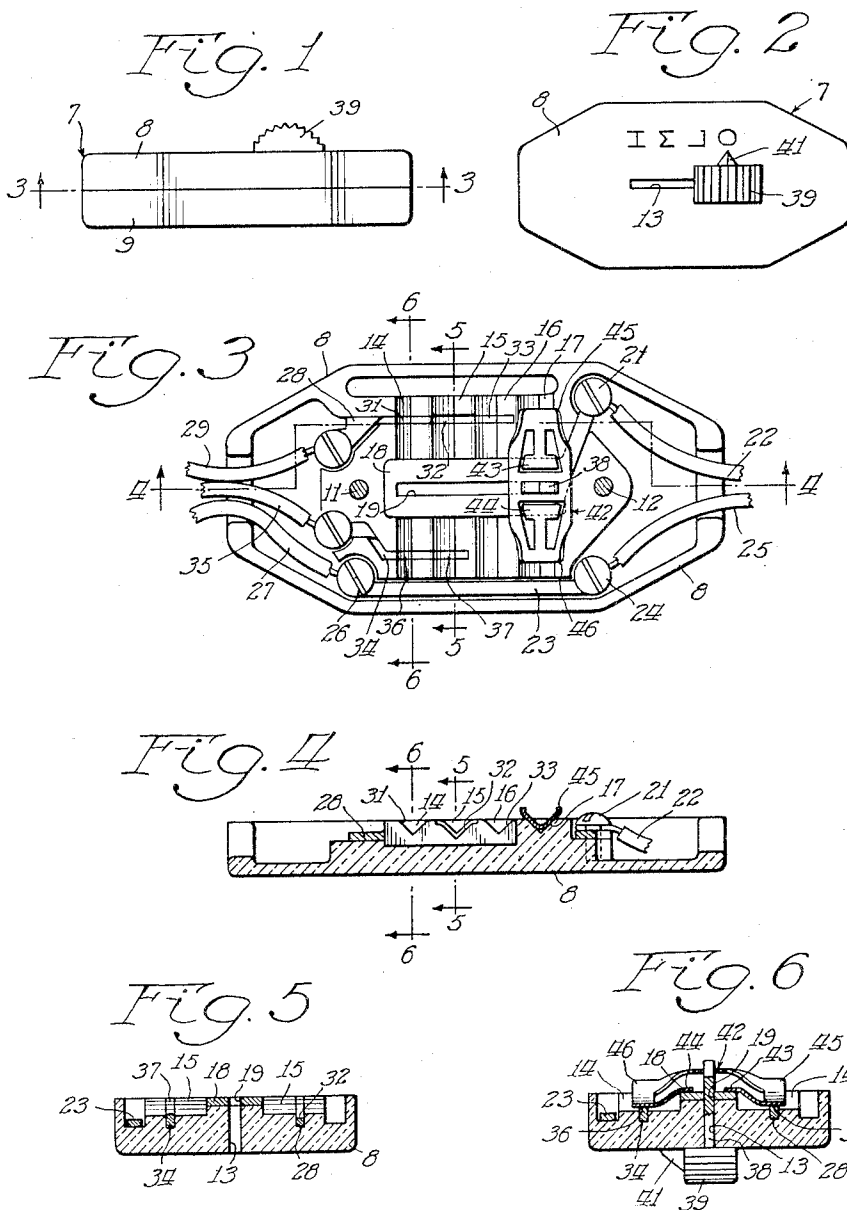
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ELECTRIC SWITCH

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ELECTRIC SWITCH

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6 Claims. (Cl. 200—16)

This invention relates to switches, and particularly to a switch whereby a plurality of circuit connections may be established for controlling the operation of a heating element, such, for example, as an electric heating pad, or the like.

One object of the present invention is to provide a switch which is convenient to operate, and which is constructed to insure proper positioning of the various elements embodied in the construction.

Another object of the invention is to provide novel and efficient means for yieldingly securing the relatively movable contacts against accidental displacement with respect to the stationary conductors.

Another object of the invention is to provide a structure wherein the movable contacts are combined in an integral unitary structure to insure maintaining their proper operative and efficient relationship at all times.

Another object of the invention is to provide a switch structure for establishing a plurality of selected circuit connections, wherein the movable contact element is at all times maintained in operative engagement with one of the line terminals of the device.

Another object of the invention is to provide a switch whereby a plurality of circuit connections may be successively established by rectilinear sliding movement of the movable contacts.

A further object of the invention is to provide a switch structure wherein all the wire terminals, circuit connections and actuating member are mounted on one of the housing or cover members in which the device is mounted.

A still further object of the invention is to improve devices of the character described in sundry details hereinafter referred to and particularly pointed out in the appended claims.

One embodiment of the present invention is shown for illustrative purposes in the accompanying drawing, in which

Fig. 1 is a side elevational view of a switch housing and actuating member employed in the present structure and embodying features of the present invention;

Fig. 2 is a top plan view of the structure shown in Fig. 1 and illustrates the relationship of the slidable actuating member to indicia on the housing for determining the character of circuit connection established therein;

Fig. 3 is an enlarged bottom plan view of one of the housing members illustrating the manner of mounting the circuit terminals, stationary contacts and switch actuating mechanism there-

in, the view being taken substantially as indicated by the line 3—3 of Fig. 1;

Fig. 4 is a longitudinal sectional view taken substantially as indicated by the line 4—4 of Fig. 3;

Fig. 5 is a transverse sectional view through a portion of the structure illustrated in Figs. 3 and 4, and taken substantially as indicated by the lines 5—5 thereof; and

Fig. 6 is a transverse sectional view through another portion of Figs. 3 and 4 on the lines 6—6 thereof showing the movable contacts and actuating member in place, and illustrates the operative relationship of the stationary and movable contacts mounted in one of the housing members.

As shown in the drawing, the housing of the present invention, indicated as a whole by the numeral 7 comprises top and bottom members 8 and 9, respectively, adapted to be secured together by means of screws 11 and 12, the said screws being positioned at different distances from the end of the housing to insure convenient and proper assembling of the members 8 and 9.

The upper member 8 is provided with a longitudinally extending elongated slot 13 positioned, preferably, adjacent the central portion thereof, and on its bottom or inner side is provided with a plurality of ribs forming a plurality of substantially parallel grooves 14, 15, 16 and 17 extending transversely to the slot 13 on opposite sides thereof.

Mounted in the upper housing member 8 is a stationary conductor 18 positioned adjacent the central portion thereof and having a slot 19 formed therein in registry with the slot 13 formed in the member 8, one end of the conductor 18 being provided with a binding screw 21 by which the conductor may be connected to a source of current supply by means of a line wire 22.

Rigidly mounted also in the upper housing member 8 is a through connection 23 having a binding screw 24 adjacent one end thereof adapted for connection to a line wire 25 associated with the source of current supply, and at the opposite end of the through connection 23 is a binding screw 26 adapted for connection with a conductor 27 forming part of a heating circuit, such, for example, as employed in heating pads, or the like.

Rigidly mounted also is the upper housing member 8 at one side of the slotted conductor 18 is a stationary conductor 28 adapted for connection with a current conductor 29 of the heat-

ing circuit, the conductor 28 having a plurality of notches 31, 32 and 33 formed therein adapted to be positioned in substantial alignment with the grooves 14, 15 and 16, respectively, formed in the housing member 8, the notch 32 of the conductor 28 being depressed somewhat below the bottom of the groove 15 as clearly shown in Figs. 4 and 5, while the bottoms of remaining notches 31 and 33 are elevated slightly above the bottom portions of their respective grooves 14 and 16 as shown in Fig. 6.

Mounted also in the upper housing member 8 on the opposite side of the slotted conductor 18 is a stationary conductor 34 of somewhat shorter length than the conductor 28 and adapted to be connected to a flexible conductor 35 of the heating circuit, the conductor 34 having notches 36 and 37 formed therein adapted to be positioned in alignment with the grooves 14 and 16, respectively, formed in the housing member 8, the bottoms of the notches 36 and 37 being elevated slightly above the bottom portions of their respective grooves 14 and 16, as shown in Fig. 6.

Mounted in the slots 13 and 19 and slidable longitudinally therein is a shank portion 38 of an actuating member 39 positioned on the outer side of the housing and having a pointer or indicator 41 mounted thereon.

Secured to the inner end of the portion 38 is a movable contact member, indicated as a whole by the numeral 42, formed preferably of resilient current conducting material and having resilient portions 43 and 44 engageable at all times with the slotted conductor 18 and slidable longitudinally thereon, the movable contact member being also provided with oppositely disposed resilient contacts 45 and 46 adapted to engage and cooperate respectively with the stationary conductors 28 and 34 mounted in the housing member 8 on opposite sides of the slotted conductor 18.

It will be observed from the foregoing description that as the actuating member 39 is moved longitudinally of the housing, the movable contacts 45 and 46 will be brought into engagement with either one or the other or both of the stationary conductors 28 and 34 for establishing a plurality of circuit connections within the housing, and that when the movable contacts 45 and 46 are in engagement with the groove 17 as shown in Figs. 3 and 4, the contacts will be out of engagement with the conductors 28 and 34 or in "off" position.

In the operation of the device, it will be noted that if the actuating member 39 is moved to the left (Figs. 2, 3 and 4) to position the contacts 45 and 46 in the groove 16 and in engagement with the notched portion 33 of the conductor 28, a circuit connection for "low" heat will be established between the source of current supply and the heating unit, through the conductors 22 and 18, resilient portions 43 and 44, contact 45, conductors 28, 29 and 27, through connection 23 and conductor 25, and that if the actuating member is moved further to position the contacts 45 and 46 in the groove 15 and in engagement with the notched portion 32 of the conductor 34, the notch 32 of the conductor 28 being positioned below the bottom of the groove 15 and out of engagement with the movable contact 45, a circuit connection for "medium" heat will be established between the source of current supply and the heating unit, through the conductors 22 and 18, resilient portions 43 and 44, contact 46, conductors 34, 35 and 27, through connection 23 and conductor 25; and that if the actuating

member 39 is moved still further in the same direction to position the contacts 45 and 46 in the groove 14 and in engagement with the notched portions 31 and 36 of the conductors 28 and 34, respectively, as shown in Fig. 6, a circuit connection for "high" heat will be established between the source of current supply and the heating unit through the conductors 22 and 18, resilient portions 43 and 44, contacts 45 and 46, stationary conductors 28 and 34, conductors 29, 35 and 27, through connection 23 and conductor 25.

Shown on the outer or upper side of the housing member 8 are indicia "O", "L", "M" and "H" (Fig. 2) designating "off", "low", "medium" and "high", respectively, and with which the indicator or pointer 41 may be brought into registry for indicating the connections established between the movable contacts 45 and 46 with the conductors 28 and 34 within the housing.

Obviously, the present invention is not limited to the precise construction and arrangement shown and described as the same may be variously modified. Moreover, all the features of the invention need not be used conjointly as the same may be used to advantage in variously different combinations and sub-combinations.

What I claim as new and desire to cover by Letters Patent is:

1. In an electric switch, the combination of a housing comprising upper and lower members, said upper member having a slot formed therein, a stationary conductor mounted in the upper member and having a slot in registry with the slot formed in the said upper member, a plurality of notched conductors rigidly mounted in the upper member, a movable contact member having a portion thereof operatively related at all times to said slotted conductor, an actuating member outside the housing extending through said slots and connected to said contact member for moving other portions thereof into engagement with one or another or all of the said notched conductors to establish a plurality of circuit connections within said housing.

2. In an electric switch, the combination of a housing having a slot formed therein and a plurality of substantially parallel grooves extending transversely to said slot, a stationary conductor having a slot formed therein adapted to register with the slot formed in said housing, a plurality of substantially parallel conductors rigidly mounted in the housing and having a plurality of spaced notches positioned in substantial alignment with certain of said grooves, one of the notches in one of the notched conductors being deeper than its aligned groove, a movable contact member having portions thereof engageable at all times with said slotted conductor, an actuating member outside the housing extending through said slots and connected to said contact member for moving other portions thereof transversely with respect to said grooves and into engagement with one or another or all of the notched conductors to establish a plurality of circuit connections within said housing.

3. In an electric switch, the combination of a housing having a slot formed therein and a plurality of substantially parallel grooves extending transversely to said slot, a stationary conductor having a slot formed therein adapted to register with the slot formed in said housing, a plurality of elongated substantially parallel conductors of different length rigidly mounted in the housing and having a plurality of spaced notches posi-

tioned in substantial alignment with certain of said grooves, one of the notches in one of the notched conductors being deeper than its aligned groove, a movable contact member having resilient portions engageable at all times with said slotted conductor, an actuating member outside the housing extending through said slots and connected to said contact member for moving other portions thereof transversely with respect to said grooves and into engagement with one or another or all of the notched conductors to establish a plurality of circuit connections within said housing.

4. In an electric switch, the combination of a housing having a slot formed therein and a plurality of substantially parallel grooves extending transversely to said slot on opposite sides thereof, a stationary conductor having a slot formed therein adapted to register with the slot formed in said housing, a plurality of substantially parallel conductors rigidly mounted in the housing at opposite sides of the slotted conductor and having a plurality of spaced notches positioned in substantial alignment with certain of said grooves, one of the notches in one of the notched conductors being deeper than its aligned groove, a movable contact member having portions thereof engageable at all times with said slotted conductor and having oppositely disposed resilient portions extending laterally therefrom, an actuating member outside the housing extending through said slots and connected to said contact member for moving the resilient portions thereof transversely with respect to said grooves and into engagement with one or another or all of the notched conductors to establish a plurality of circuit connections within said housing.

5. In an electric switch, the combination of a housing having a slot formed therein and a plurality of substantially parallel grooves extending transversely to said slot on opposite sides thereof, a stationary conductor having a slot formed therein adapted to register with the slot formed in said housing, a plurality of substantially parallel conductors of relatively different length rigidly mounted in the housing at opposite sides of the slotted conductors and having a plurality of spaced notches positioned in substantial alignment with certain of said grooves, one of the notches in one of the notched conductors being

deeper than its aligned groove, a movable contact member having resilient portions engageable at all times with said slotted conductor and having other resilient portions extending laterally at opposite sides thereof, an actuating member outside the housing extending through said slots and connected to said contact member for moving said other resilient portions thereof transversely with respect to said grooves and into engagement with one or another or all of the notched conductors to establish a plurality of circuit connections within said housing.

6. In an electric switch, the combination of a housing comprising separable upper and lower members, means for securing said members together, said upper member having a slot formed therein and a plurality of substantially parallel grooves extending transversely to said slot on opposite sides thereof, a through connection mounted in said upper member and adapted to be connected at one of its ends to a source of electrical energy and at its opposite end to a heating circuit, a stationary conductor mounted in said upper member and adapted to be connected to said source of electrical energy, said conductor having a slot formed therein adapted to register with the slot formed in said upper member, a pair of substantially parallel conductors of relatively different length rigidly mounted in said upper member on opposite sides of the slotted conductor and adapted to be connected to said heating circuit, said parallel conductors having a plurality of notches formed therein and positioned in substantial alignment with certain of said grooves, one of the notches in one of said parallel conductors being deeper than the adjacent aligned groove, a movable contact member having resilient portions engageable at all times with said slotted conductor and having other resilient portions extending laterally at opposite sides thereof, an actuating member outside the housing and extending through and having a rectilinear movement in said slots, said actuating member being connected to the contact member for moving said other resilient portions thereof transversely with respect to said grooves and into engagement with the notches in one or another or all of the notched conductors to establish a plurality of circuit connections within said housing.

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