

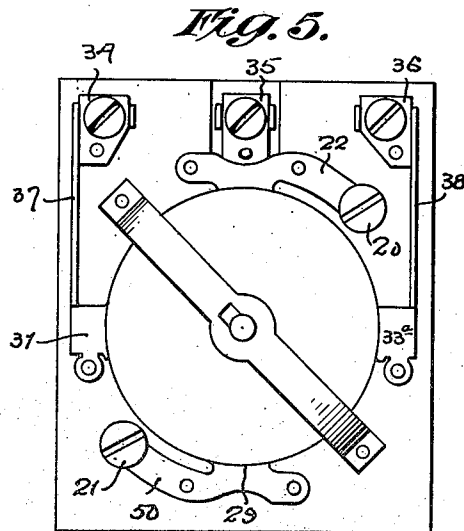
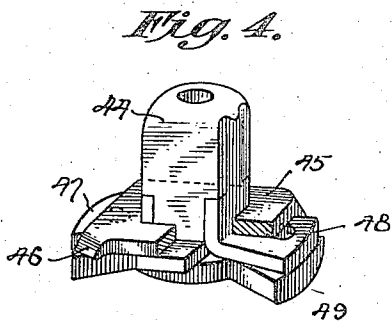
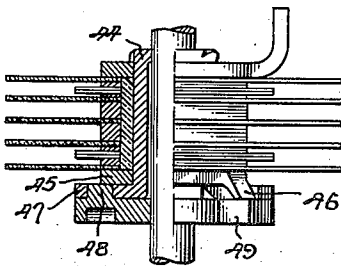
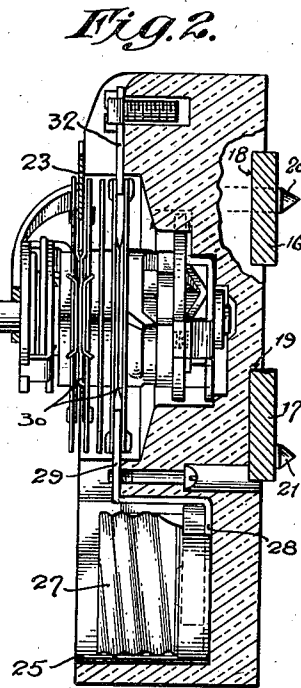
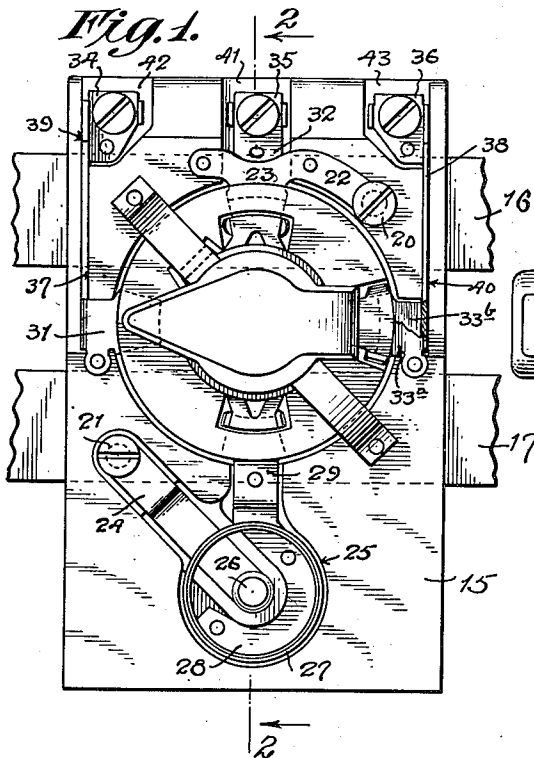
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W. H. HARRINGTON

1,704,568

ELECTRIC SWITCH

Filed Aug. 26, 1924



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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

Application filed August 26, 1924. Serial No. 734,196.

My invention relates to electric switches, and particularly to a switch adapted to control relatively heavy current, such as is commonly used to energize the heater units of electric ranges or the like. The object of my invention is to provide a switch having certain features of improvement hereinafter described or shown in the accompanying drawings, in which—

Fig. 1 is a plan view of a switch in which my invention is embodied in one form;

Fig. 2 is a section on the line 2—2, Fig. 1;

Fig. 3 is a broken side elevation through portion of the switch mechanism;

Fig. 4 is a perspective of the switch blade carrier detached; and

Fig. 5 is a plan view of an unfused switch base in which my invention is embodied.

In most of its features, the present switch mechanism is that shown in my prior Patent No. 1,466,507, August 28, 1923. The present invention is primarily concerned with the base and the general layout of the switch contacts and connections, rather than with the mechanism, although certain improvements in detail of the latter are illustrated.

The insulating switch base 15 is shown as of generally rectangular outline in plan, adapted for side-by-side mounting with other switches of like construction upon bus bars 16—17, or the like, to afford a switch panel by which the various heater units of a range may be separately controlled. The bus bars are accommodated in appropriate channels 18 and 19, formed in the lower face of the base, and are tapped at appropriate points to receive the heavy screws 20 and 21 by which the base is mechanically secured upon the bus bars, and at the same time electrically connected to certain of the switch contacts. Thus the screw 20 passes through the strap 22 mounted upon the upper face of the base and integral with the contact 23. The screw 21 passes through the strap 24 which is angled into the bottom of the well 25 in the base and terminates in the center contact 26 of a fuse receptacle of the Edison plug type. The shell 27 of the receptacle is secured in place by a strap 28, the upward extension of which, out of the well, is offset to form the switch contact 29, opposite contact 23, but at a lower level.

The upper and lower blades 30 of the switch engage the upper and lower main contacts 23 and 29 and distribute the current

thus derived from the bus bars 16—17, to other switch contacts 31, 32, 33^a, 33^b, which are integral with terminals 34, 35, 36 respectively, from which connection may be made to a heater unit in well known fashion, to secure high, medium and low heats, or other combinations, depending upon the position of the switch. The terminal 34 is connected to the switch contact 31 (high level) by an integral strap 37, from which both terminal and contact are offset substantially at right angles. The contacts 33^a and 33^b (respectively high and low level) are connected to terminal 36, by the integral strap 38, from which the terminal and both contacts are offset, (the contacts from opposite margins of the strap). Both straps 37 and 38 lie in parallel planes, normal to the plane of the base 15, and are accommodated in channels 39 and 40 spaced inward from the side margins of the base a sufficient distance to afford between these straps and like straps of juxtaposed switch bases, a sufficient space to obviate danger of short circuit. The terminal 35 (low level) is spaced intermediate the terminals 34 and 36, and is accommodated on a depressed ledge 41 lying at the same level as the ledges 42 and 43 upon which the terminals 34 and 36 are secured.

The construction described possesses the advantage that the connection between the bus bars 16 and 17 and the associated switch contacts 23 and 29 is established directly by the securing screws 20 and 21 (in the latter case through an interposed fuse) thus obviating the use of shunts, which not only add to the expense of construction, but also introduce an objectionable element electrically, since poor connections at this point are a frequent cause of trouble.

Similarly the distributing terminals 34, 35 and 36 and their associated switch contacts 31, 32 and 33, are integral, thus insuring the best possible electrical connection through the switch to the distributing terminals. The conductors are all assembled upon the upper surface of the base, where their condition may be readily inspected. Securing screws passing through the base, hold the contacts and terminals firmly in position. A simple and efficient layout is thus provided which affords the utmost security of electrical connection, and a minimum of parts.

The switch mechanism is of the character

described in my patent above mentioned, with the exception of the blade carrier 44. This carrier is shown in detail in the Patent Number 1,506,563 to J. R. Carlson, dated August 26, 1924, and differs therefrom only in that the retaining washer 45 is provided at its corners with downwardly offset lugs 46 which engage the side margins of the foot piece 47 and thus relieve the studs 48 from the shearing strains to which they are subjected incident to the impact of the latch plate wings 48 against the stops with which they cooperate.

In Fig. 5 I have shown a switch base from which the fuse receptacle is omitted. In this instance the connecting screw 21 passes through a strap 50 analogous to the strap 22 engaged by the screw 20. The switch contact 29 (low level) is integral with the strap 50. The construction is otherwise that shown in Figs. 1 and 2, but adapted for use in installations in which the protective fuse or fuses is, or are, arranged at some other point than in the switch base. Good electrical practice, however, requires in my judgment, that each switch circuit shall be independently protected by a fuse in the manner indicated in Figs. 1 and 2, although I am aware that in certain localities it is permissible to provide a cut-out only between the bus bars 16 and 17 and the mains from which they derive their current.

A detail of considerable practical value is afforded by springing away from the base the ends of the straps 22, 24 (or 50) through which the bolts 20 and 21 pass. A lock-washer effect is thus obtained when the bolts are turned down hard into bus bars 16 and 17, which not only prevents the bolts from jarring loose, but also insures better electrical connection between the bolts and both the bars and the straps, and obviates the use of lock washers. Light serration of the under face of the bolt heads and of the metal surrounding the holes in the straps through which the bolt shanks pass, increases this security.

Various modifications in detail of construction will readily occur to those dealing with the problems, which embody the advantages without departing from the scope of what I claim as my invention.

I claim—

1. In an electric switch, an insulating base recessed from its upper face to receive a snap switch mechanism, a strap lying normal to the plane of the face of the base but extending in the direction of its length substantially parallel thereto, a switch contact offset from one end of the strap into the switch recess, and a connecting terminal offset from the opposite end of the strap, said contact and terminal lying substantially parallel to the face of the base.

2. In an electric switch, an insulating base

of substantially rectangular shape at one end, spaced depressed ledges at said end, depressed channels spaced from the opposite side margins of the base and leading from certain of said ledges, a well for the reception of a snap switch mechanism, straps lying in said channels in planes normal to the plane of the base but extending in the direction of their length substantially parallel to the plane of the base, contacts offset from one end of each of said straps into the switch well, and connection terminals offset from the opposite ends of said straps onto certain of said depressed ledges.

3. In an electric switch, an insulating base recessed from its face to afford a well for the reception of a snap switch mechanism, a depressed ledge at one end of the base, a channel spaced from the margin of the base and leading from said ledge, in combination with a strap lying in said channel in a plane substantially normal to the plane of the base but extending in the direction of its length substantially parallel to said plane of the base, a pair of contacts at different levels offset from the margins of said strap at one end and projecting into said well, and a connection terminal offset from the opposite end of said strap.

4. In an electric switch, an insulating base recessed at one end to afford a group of depressed, spaced ledges, and a central well for the reception of a switch mechanism, channels extending from certain of said ledges to opposite sides of said well, and straps lying in said channels in planes substantially normal to the plane of the base but extending in the direction of their length substantially parallel to the plane of the base, contacts offset from one end of each of said straps into the switch well, and connection terminals offset from the opposite ends of said straps onto said ledges.

5. In an electric switch, a one-piece insulating base recessed to form a depressed ledge at one end, and a central well for the reception of a switch mechanism, a combined connection terminal and switch contact arranged on said ledge and projecting into the switch well to form a low level contact, a contact strap mounted on the face of said base and spanning said ledge, said contact projecting into the well to form a high level contact, and having an integral lateral extension, together with a screw passing through said extension and base to establish electrical and mechanical connection with a current feed bus bar.

6. In an electric switch, a strap having a marginal lug at one end offset substantially at right angles to the plane of the strap to afford a connection terminal, and having a pair of marginal lugs similarly offset from its opposite end to form a pair of high and low level switch contacts.

7. An electric switch comprising a substantially rectangular insulating base recessed from its upper face to afford a group of depressed ledges at one end, a central well for the reception of a snap switch mechanism, and a fuse plug well at its opposite end, said base being adapted on its lower face for the reception of a pair of transverse bus bars, a strap mounted on the face of the base and offset at one end into the fuse plug well, screw means passing through said strap to take into one of the bus bars to establish electrical and mechanical connection therewith, a strap extending out of said well and offset to form a switch contact projecting into the switch well at low level, a second contact projecting into the switch well at a point substantially opposite said first contact but at high level, a screw passing through said contact and base to establish mechanical and electrical connection with the other bus bar, distributing switch contacts projecting into the switch well at radially spaced points, and connection terminals arranged on the face of the switch base at one end of the latter and integral with said distributing contacts.

8. In an electric switch, a one-piece insulating base recessed in its lower face to receive transverse bus bars, and in its upper face to form a switch well, main switch contacts located at said well, screws piercing the base and serving to establish electrical connection between said main switch contacts and the bus bars, branch switch contacts at said well, distributing terminals accommodated in the upper surface of the base, and straps integral with said terminals and dis-

tributing switch contacts and accommodated in the upper face of the base.

9. In an electric switch, a one-piece insulating base recessed in its lower face to receive bus bars, and in its upper face to afford a switch well, main switch contacts located at said well, screws piercing the base in the neighborhood of the well and serving to electrically connect the main switch contact bus bars, branch switch contacts arranged at the well, distributing terminals accommodated in the upper surface of the base and located adjacent the margin thereof, and straps let into the upper surface of the base and serving to connect the distributing switch contacts with the distributing terminals.

10. An electric switch comprising a substantially rectangular insulating block recessed in its upper face to form a switch well, sheet metal straps extending in the direction of their length substantially parallel to the upper face of the block and lying in planes adjacent the opposite side walls of the block and substantially parallel thereto, the opposite ends of each of said straps being offset in the same direction and the offset ends of one strap being faced toward the offset ends of the other strap and substantially parallel with the face of the base, the opposite offset ends at one end of said straps being located at opposite sides of the switch well and forming switch contacts, the other opposed offset ends of said straps being located at one end of the block and constituting wire terminals.

In testimony whereof I have signed my name to this specification.

WILLIAM H. HARRINGTON.