PORTABLE ELECTRIC SWITCH APPARATUS

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Application August 18, 1953, Serial No. 304,876

3 Claims. (Cl. 307--114)

This invention relates to portable electric switch apparatus and more particularly to such apparatus having provision for making and breaking the electric circuit in connection with one or more electric lighting fixtures, either selectively or as an entire group.

It is well known that in hospitals, for example, where there are several beds in one room, it is often inconvenient, and at times impossible for patients to turn on or turn off a reading lamp or service lamp as desired, thus necessitating much extra time and attention by the nurses, and an important object of the invention is to provide a device of the type herein set forth which enables room lights to be turned on and off by any patient from any bed in the room by simply moving the switch lever provided for that purpose in the invention.

Another object of the present invention is to provide a switch and related junction box arrangement, which in practice, requires no special installation work or expense, it being necessary only to connect the improved device to the lighting fixture and a wall receptacle as will hereinafter more fully be explained.

A further object is to provide for making various types of electric wiring hookups to meet various room arrangements and conditions, without changing or altering the device or the room wiring in any way.

Other objects and advantages to be attained will appear evident from reference to the following description, together with the accompanying drawings, in which:

Figure 1 is a general schematic plan view showing one type of practical wiring arrangement possible with the invention, the covers being removed from both the junction box and switch elements illustrated.

Figure 2 is an enlarged perspective view of the junction box element without the wiring, and the cover being removed.

Figure 3 is a sectional view of the junction box element taken on the line 3--3 of Figure 1, and showing the cover in assembled position for use.

Figure 4 is an enlarged perspective view of the switch element without the wiring, and the cover being removed.

Figure 5 is an enlarged perspective view showing the switch element assembled complete with the cover.

Figure 6 is an enlarged sectional view of the switch element taken on the line 6--6 of Figure 1.

Figure 7 is an enlarged detail view of the rotatable circuit-make-and-break element.

Figure 8 is a sectional view taken on the line 8--8 of Figure 1, through the circuit-make-and-break element in the switch element.

It will appear obvious that the several wires shown leading from the group of switches in the schematic arrangement of Figure 1, are, in practice, contained in a single conductor as is common in portable electric appliance wiring. It is obvious, too, that this invention is also well adapted for residential use, especially where two or three beds may be in one room, where it may be preferred to enable the light to be turned on or off from any one of the beds at will.

Referring now to the drawings in detail, and first to Figure 1, the plug 10 is adapted for insertion in the usual wall receptacle, and while the negative wire 11 and the positive wire 12 leading therefrom are designated by the dotted line and solid line respectively, this has no special significance, as other wires in this view are shown by still other types of lines, simply to facilitate an understanding of the practical adaptability of the invention to various types of possible hookups, the one shown reflecting no particular novelty, and so deserves no detailed description. It is here noted that any suitable non-conductive insulating material may be used in the manufacture of the invention.

The means for accomplishing the purpose of this invention are embodied in the structure and arrangement of parts in the herein described switch and junction box elements now to be explained.

The plug 13 shown at the top of the Figure 1 and in engagement with the contact clip members 37 and 38 in the junction box is of the type usually furnished with a portable electric lamp, and is here shown as one example of the adaptation of the invention.

For convenience, the body portion of the junction box element will hereinafter be referred to by the numeral 14, and its cover portion by the numeral 15, while the body portion of the switch element will hereinafter be referred to by the numeral 16, and its cover portion by the numeral 17.

The junction box and switch elements, taken together with their respective covers are of a size and shape to fit the hand for ease of operation.

The junction box body 14 being substantially pear shaped, that is, having a bulbiform end, is
provided with a relatively shallow vertically disposed circuitous wall 18 having the shoulder 19 therearound. This wall 18 being interrupted at spaced intervals on its bulbiform part by suitable vertically disposed slots 20 to accommodate necessary wiring, and on its straight end part by the vertically disposed twin slots 22 to admit the contact tongues 135 of the plug 13 in practice.

A partition structure is provided in the body 14 for the dual purpose of keeping the wire terminals completely separated and for preventing spark jumps between the terminal screws—see Figures 1, 2 and 3. Said terminal screws are suitably threaded into the inner face of the body 14.

The partition structure is of equal height with said circuitous wall 18, so that when the cover 15 is having the relatively shallow downwardly projecting peripherally disposed square lip 21 is assembled with the body 14—see Figure 3—the cover 15 has flush contact with said partition structure, thus effecting the complete top and bottom seal of all parts of the partition structure within the assembled junction box element substantially the character of a one-piece unit. And it is obvious that said square lip 21 is of matching shape with the shoulder 19 of the wall 18 and is adapted to correspondingly engage the wall 18 on the body 14 of the junction box, thus adding further to the said unit character of the same.

The partition portion 23 of the body 14 joins the straight end part of said body centrally thereof and between the twin slots 22, and is slightly laterally offset in order to form, together with the partition portion 24, the centrally disposed wire channel 25 which terminates at the slot 20 centrally of the bulbiform portion of the body 14.

It will be noted that said partition portion 24 curves at one end to join one side of the wall 18, and that by the shape of the partitions 23 and 24 the terminal screws 26 and 27 are excluded from any possibility of spark jump from any of the other terminal screws.

It will be noted, too, that the two laterally extending portions 28 and 29 of the partition 23 are alignedly and oppositely positioned with respect to the two like laterally extending portions 30 and 31 of the partition 24, thereby providing against any possibility of spark jump between the terminal screws 32 and 33, and between 24, 33 and 36 terminal screws.

The contact clip members 37 and 38 secured by the terminal screws 26 and 27 and in register with the twin slots 22 are adapted to receive the twin contact tongues 13A of the plug 13, while the electric conductor 133 leads, for example, to a portable electric lamp or other lighting fixture.

The switch elements, of course, are associated with and connected to the junction box element by suitable wiring hookup, and the body 14 of the switch elements, similar to the body 14 of the junction box element, is provided with a relatively shallow vertically disposed circuitous wall 39 having the shoulder 40 therearound, said body 15 being of substantially rectangular shape with the vertically disposed slot 41 centrally in one end of the wall 39 to accommodate the necessary wiring. A partition structure is provided in the body 16 for the dual purpose of keeping the wire terminals completely separated and for preventing spark jumps between the terminal screws 42 and between the circuit-make-and-break members 45 and 44 and 46 and 46 is practice. Said partition structure is comprised in the relatively broad laterally disposed hand portion 47 having a plurality of relatively short partition portions extending in opposite directions from the band 47 and longitudinally of the body 16, one group of partition portions 48 separating the terminal elements, and a second group of partitions 49 separating the circuit-make-and-break members 43, 44, 45 and 46 in practice.

The said partition structure in the body 16, like that in the body 14, is of equal height with the circuitous wall 39, so that in like manner when the cover 17 having the relatively shallow downwardly projecting peripherally disposed square lip 55 is assembled with the body 16—see Figures 6 and 8—the circuitous shoulder 56 bears against the bosses 52 and maintains the shaft member 51 in firm yet rotatable engagement, and so at the same time the cover 17 has flush contact with said partition structure to effect the complete top and bottom seal of all parts of the partition structure, giving the assembled switch element substantially the character of a one-piece unit.

Now, the element in this invention that actually effects the off-and-on function of the switch is the circuit-make-and-break element 50 in which are embedded by suitable production means the circuit-make-and-break members 43, 45 and 46—see especially Figure 7—and this element 50 is in the form of a shaft 51 of cylindrical shape, having a bearing boss 52 at opposite ends journaled for rotatable engagement in suitable slots 53 oppositely positioned in opposite inner faces of the wall 39 of the body 16.

In the mode shown in Figures 5 and 6 the lever 54 is provided in suitable location on the shaft 51, and as shown in Figures 1, 4, 5 and 6, the circuit-make-and-break element 50 is in position to engage the circuit-make-and-break members 43 and 44 with certain of the contact members 57, and in the wiring hookup shown, the electric circuit would be made, and the lights would be on. It is here noted that the switch element in the center of Figure 1 has a 4-way hookup, while the switch elements on the right-hand and left-hand sides of Figure 1 have a 3-way hookup, said example illustrative of the flexibility of the invention, as many different types of wiring hookups are possible therewith.

Now, to break the electric circuit and extinguish the lights, the lever 54 is simply pressed in the direction indicated by the arrows "C" in Figure 6 to rotate the element 50 which releases said members 43 and 44 from engagement with said contact members 57, moving the circuit-make-and-break members 45 and 46 arcuately as indicated by the arrows "D" in Figure 6 so that said contact members 45 and 46 are brought into engagement with certain of the contact members 57, the circuit-make-and-break members 43 and 44 being moved out of engagement with the directions of the arrows "E" in Figure 6, thus breaking the electric circuit to extinguish the lights.

It is noted that in the Figures 1, 4, 6 and 8 a substantially square shaped upwardly projecting lug portion 58 is provided adjacent the element 50 in the body 18. Suitably mounted in this lug portion 58 is the ball and spring element 59 positioned longitudinally of said body 16 so that its spring cushioned ball portion 60 bears against the shaft 51 of said element 50.

As indicated by the dotted lines in Figure 6
and in the sectional showing of the shaft 51 in Figure 8, two spherical impressions 51A are provided on the cylindrical surface of the shaft 51, and, when this shaft is moved to either the off or on position in the switch element, the ball portion 60 of the spring element 53 yieldably engages one or the other of said spherical impressions 51A as the case may be, to hold the position of the element 50 until changed at the will of the operator.

Suitable bolt and nut means are provided for securing the covers on the bodies for both the junction box element and the switch elements, an example being shown at "X" for the switch in Figures 5 and 6, and an aperture for the purpose being shown at "Z" for the junction box in Figures 1 and 2.

Referring to the various types of electric circuit hookups for which the invention is adapted, completely illustrated directions are provided with each device produced, thereby precluding any possibility of erroneous wiring.

From the foregoing description, taken together with the accompanying drawings, it is evident that a switch apparatus is produced which readily lends itself to the purpose herein set forth, and which may be applied to a variety of practical uses without special skill and without the slightest alteration or change in the house wiring, while at the same time meeting fully all standard and approved requirements covering public safety.

Although the invention as described and illustrated sets forth the essential character thereof, it is not intended as a limitation, as alteration and change may be made within the spirit and scope of the appended claims.

What is claimed is:

1. In a portable electric combined switch and junction box apparatus having switch and junction box elements and adapted for connection with a wall receptacle and a lighting fixture, removable cover provision for the switch and junction box elements, terminal contact provision comprised of a plurality of terminal contact units in said switch and junction box elements, partition means between each of said terminal contact units to separate each unit from the others, suitable outlets in the switch and junction box elements for the wires of the electric circuit hookups for which said switch and junction box elements are adapted, selectively operable means in said switch element for making and breaking electrical circuit connection between said wall receptacle and lighting fixture at will.

2. In a portable electric combined switch and junction box apparatus having switch and junction box elements and adapted for connection with a wall receptacle and a lighting fixture, removable cover provision for the switch and junction box elements, terminal contact provision comprised of a plurality of terminal contact units in said switch and junction box elements, fixed partition provision in said switch and junction box elements and adapted for suitable flush contact with said cover provision to form closed portion means between each of said terminal contact units to separate each unit from the others, suitable outlets in the switch and junction box elements for the wires of the electric circuit hookups for which said switch and junction box are adapted, contact means in one end of said junction box element for receiving removably the electric cord plug provision of an electric lighting fixture, a selectively rotatable circuit-make-and-break element suitably rotatably mounted adjacent one end of said switch element, means in said switch element for releasably holding said circuit-make-and-break element in circuit making or breaking position at will.

3. In a portable electric combined switch and junction box apparatus as set forth in claim 1, in which a cylindrically shaped selectively rotatably operable circuit-make-and-break element having its opposite ends suitably journalled in the switch element, and means in said switch element operably associated with means in said circuit-make-and-break element for releasably holding said circuit-make-and-break element in circuit making and breaking position at will.

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No references cited.