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ELECTRICAL SWITCH SYSTEM

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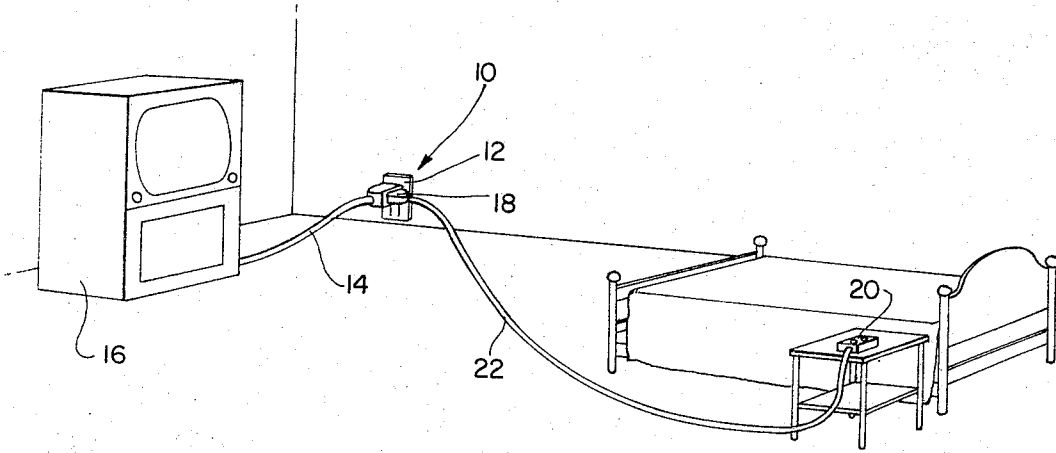


FIG. 1

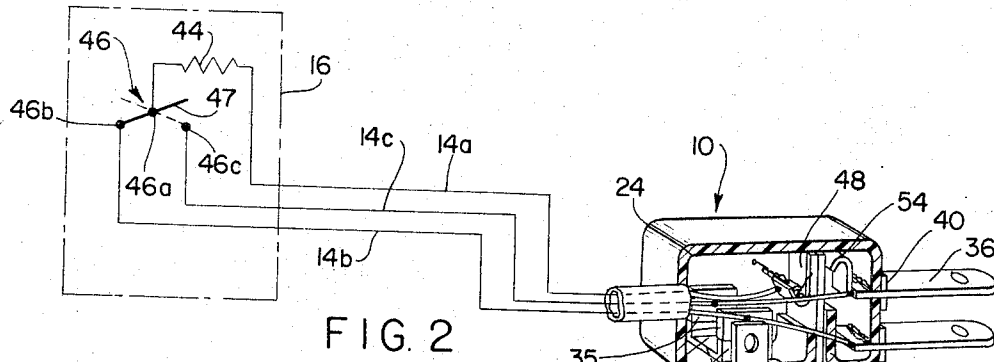


FIG. 2

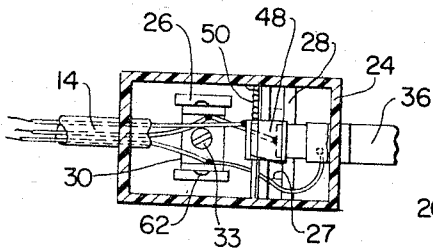


FIG. 4

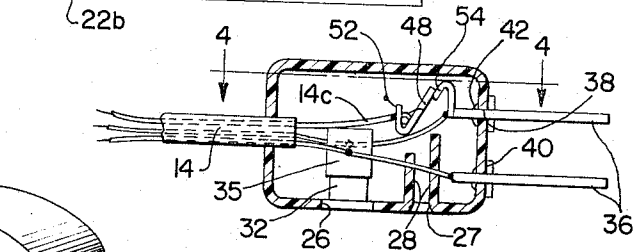


FIG. 3

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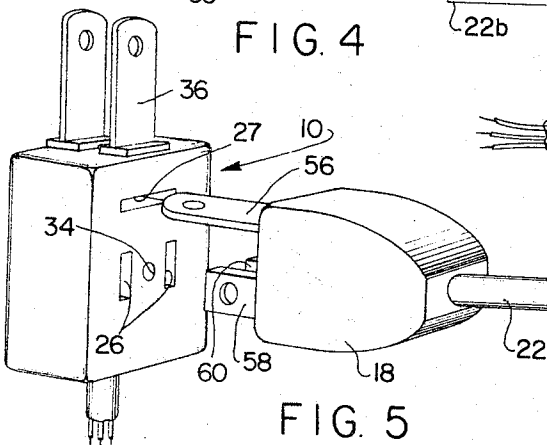


FIG. 5

1

3,334,250

ELECTRICAL SWITCH SYSTEM
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ABSTRACT OF THE DISCLOSURE

A switch system for use with an electrical appliance including an adapter which electrically connects the appliance into a standard electric outlet permitting its operation in the conventional manner by means of a switch in the appliance itself. As desired, a remotely located switch can be plugged into the adapter to permit operation of the appliance either at the appliance itself or at the remote location without regard to the positioning of the switch arm at either switch.

My invention relates to an electrical switch system and more particularly relates to a switch system which is capable of operating an appliance from a remote location.

Electrical switch systems which are used to control such appliances as television sets, radio receivers, and the like from remote locations have found extensive use in hospitals, motels, hotels and the like. However, these systems have not been used to a widespread degree because of their inefficiency or because of their complicated design and costly maintenance. Another drawback of most known systems resides in the fact that the remote switch is operable to control the appliance only when the switch at the appliance itself is turned to the "on" position. As a result, the value of a system of this nature was negated when, in order to actuate the appliance, it was first necessary to approach same and turn the switch thereon from the "off" to the "on" position. Similarly, the switch at the appliance is operable to control said appliance only when the remote switch is in the "on" position.

My invention herein is an improvement over these conventional systems in that it is of simplified design, inexpensive to manufacture, and requires a minimum of maintenance. Furthermore, it is easily used and is adaptable to existing appliances. According to another feature of the invention, the effectiveness thereof will be without regard to the positioning of the appliance switch itself, or the remote switch, that is, whether the former or the latter is in the "on" position or in the "off" position.

Briefly, my invention takes the form of an adapter having a pair of conventional contact prongs receivable in an electrical wall receptacle in the known manner. A minor modification to the single throw "off-on" switch presently built into the appliance, is necessary but merely consists of adding a third terminal thereto which results in a switch of the double throw variety. A three conductor wire connects the modified appliance switch to the adapter in such a manner that with the circuitry described to this point, the "off-on" switch of the appliance will continue to operate in the normal manner. However, when a double throw, remotely located switch is plugged into the adapter in the manner taught by my invention, the appliance is operable by its own switch or by the remotely located switch, without regard to the relative "off" or "on" positionings, each to the other.

Accordingly, it is an object of my invention to provide an inexpensive remote control switch system applicable to electrical appliances such as televisions, radios, and the like.

Another object of my invention is the provision of a remote control switch system which can be adapted to existing appliances.

2

A further object of my invention is the provision of an adapter arranged to connect the switch of an electrical appliance to a standard outlet receptacle, but capable of further electrical connection with another switch operable to override the appliance switch to open and close the circuit to the appliance.

Still another object of my invention is the provision of an electrical appliance having a double throw switch therein, an adapter having conventional prongs receivable in a standard electrical receptacle, three-conductor cable connecting the appliance to the adapter, a second switch operable to override the appliance switch to open and close the circuit to the appliance, and three-conductor cable connecting the second switch to the adapter.

Other and further objects will be obvious or will appear hereinafter in the more detailed description when taken in conjunction with the drawings.

In the drawings,

FIGURE 1 illustrates a typical application for the invention;

FIGURE 2 depicts schematically the electrical circuit employed by the invention, certain elements being shown in outline and in cutaway form;

FIGURE 3 is a cutaway plan view of the electrical adapter;

FIGURE 4 is a section view taken along lines 4-4 of FIGURE 3; and

FIGURE 5 is a perspective view of the adapter positioned to receive therein the prongs of a male plug to connect the remote control switch thereto.

Referring now more particularly to the drawings, FIGURE 1 illustrates the use of the novel adapter indicated generally by reference numeral 10 plugged into a standard electrical wall receptacle 12 and connected by means of three-conductor cable 14 to a typical appliance represented by the television set 16. A male plug 18 inserted into the mating socket of adapter 10 thus serves to connect remote control switch 20 to the television 16 via three-conductor cable 22 and later three-conductor cable 14.

The adapter 10 includes an outer shell or casing 24 which is preferably composed of a plastic or other dielectric material. The socket portion of the adapter into which male plug 18 is inserted includes a pair of parallel, spaced apart slots 26 formed in the casing 24 (see especially FIGURE 5) and a third slot 27 oriented substantially normally to slots 26 and in symmetrical relationship thereto. A pair of parallel, non-conductive guides 28, integral with casing 24, extend inwardly thereof and partially define slot 27.

A U-shaped member of non-conductive material has a base 30 and a pair of upstanding ears 32 which extend into the interior of casing 24 when secured in place therein. As seen in FIGURE 4, the base 30 is secured by means of a suitable fastener 33 and screwed into a tapped hole 34 formed in casing 24 and over the end portions of each ear 32 is received a close fitting cap 35 of conductive material suitably pressed, crimped, or otherwise firmly attached thereto. Adapter 10 further includes a pair of conductive connector prongs 36 which are provided for insertion into standard female wall receptacle 12. Said prongs may be securely held in place within slots 38 formed in casing 24 by means of flanges 40 formed thereon and beads of solder 42 applied thereto following their insertion into said slots.

With particular reference to FIGURE 2 now, it will be seen that the electrical circuit within television 16 is represented by reference numeral 44 and that the off-on or power control switch therefor is generally indicated at 46.

The power control switch 46 of a conventional television is normally of the single throw variety so as to have one terminal 46a and another terminal 46b. Under such an arrangement, when switch arm 47 assumes the solid-line position, the television 16 is turned on, and when switch arm 47 assumes the dotted-line position, the television is turned off. In order to apply adapter 10 to a conventional television, it is necessary to add a third terminal, 46c, to control switch 46.

Cable 14 houses three lead wires connecting the terminals of switch 46 to adapter 10. Wire 14a extends from terminal 46a through television electrical circuit 44 to pivotal contact 48, said wire being soldered or otherwise electrically connected thereto.

A fixed shaft 50 is embedded in the side walls of casing 24 and extends therebetween, serving to support pivotal contact 48 thereon. A torsion spring 52 having one end secured in the side wall of casing 24 engages the contact 48 with its other end, said contact thereby normally biased into contacting engagement with junction element 54 fixed to one of connector prongs 36 as seen in FIGURE 3. Wire 14b connects terminal 46b to the cap 35 on one of the ears 32 and continues on to one of the connector prongs 36, said wire being soldered or otherwise electrically connected to cap 35 and to prong 36. Wire 14c extends from terminal 46c to the cap 35 on the other ear 32 and continues on to the other connector prong 36, said wire being soldered or otherwise electrically connected to its respective cap 35 and prong 36.

It will be appreciated that when male plug 18 is withdrawn from the socket of adapter 10, power switch 46 operates in a conventional manner to turn the television on and off. That is, with switch arm 47 in the solid-line position, television circuit 44 is activated, and with switch arm 47 in the dotted-line position, television circuit 44 remains deactivated.

Heretofore, it was pointed out that male plug 18 is receivable into the socket of adapter 10 so as to electrically connect remote control switch 20 to television 16. To this end, switch 20 is provided with three terminals 20a, 20b, and 20c which respectively connect via wires 22a, 22b, and 22c within cable 22 to connector prongs 56, 58, and 60 of male plug 18. When plug 18 is inserted into adapter 10, prong 60 is seen to extend through a slot 26 in casing 24 to make contact with one of the conductive caps 35 while twin prong 58 likewise extends through twin slot 26 to make contact with the other conductive cap 35. Each of the caps 35 is formed with a dimple 62 as an aid in assuring a positive connection between the caps and their mating prongs. Transverse connector prong 56 extends through slot 27 and between guides 28 whereby said prong is directed to engage pivotal contact 48 to rotate it counterclockwise (see FIGURE 2) against the bias of torsion spring 52 and out of engagement with junction element 54. The guides 28 also serve to prevent contact of said prong with said junction element.

It will be noted that the length of the extended prong 56 of male plug 18, is such that when it is inserted into adapter 10 it will move pivotal contact 48 away from element 54 before contact can be made by prongs 58 and 60 with conductor caps 35. Otherwise, harmful effects due to a possible short circuit may result.

Assuming that adapter 10 is plugged into wall receptacle 12 and that male plug 18 is connected to the female socket of said adapter, it will now be apparent that remote control switch 20 is capable of overriding power switch 46 at the television 16 to activate or deactivate electrical circuit 44. With the realization that wires 20a, 20b, and 20c in cable 20 are respectively connected to wires 14a, 14b, and 14c in cable 14, it will be appreciated that with switch arm 47 of power switch 46 in the solid-line position, and with switch arm 64 of remote control switch 20 in the solid-line position, circuit 44 will not be actuated. However, holding switch arm 47 in the solid-

line position and moving switch arm 64 to the dotted-line position, circuit 44 will be actuated.

Continuing, it will be seen that with both switch arm 47 and switch arm 64 in the dotted-line positions, circuit 44 will not be actuated. However, holding switch arm 47 in the dotted-line position and moving switch arm 64 to the solid-line position, circuit 44 will be actuated.

Thus, I have disclosed a novel electrical switch system of the remote control variety according to which an appliance can be activated or deactivated in a conventional manner by actuating the power switch thereon. However, it is only necessary in light of the teaching of my invention to connect a remotely located switch to a special adapter associated with the appliance to permit activation or deactivation of the appliance, by means of the appliance switch or by means of the remote switch without regard to the position of either switch in relation to the other.

While the fundamental novel features of the invention have been shown and described as applied to a single embodiment, it will be understood that various omissions and substitutions and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. It is my intention, therefore, that the scope of the invention be limited only by the claims appended hereto.

What is claimed is:

1. A remote control electrical switch system comprising: an electrical appliance, an adapter having an insulating body, a pair of inlet contacts fixed to said body and receivable in an outlet receptacle, a movable contact in said body engageable with one of said inlet contacts, a single pole, double throw switch at said appliance having a switch arm electrically connected to said movable contact and having two contacts electrically connected respectively to said inlet contacts, a plurality of openings formed in said insulating body, a plug selectively engageable with said adapter having first and second prongs receivable through said openings for electrical connection to said inlet contacts respectively, said plug further having a third prong receivable through one of said openings and engageable with said movable contact to hold said movable contact out of engagement with said one inlet contact, and a single pole, double throw remote control switch having a switch arm electrically connected to said third prong and having two contacts electrically connected to said first and second prongs respectively, said appliance switch operable to control said appliance when said plug is disengaged from said adapter and either said appliance switch or said remote control switch operable to control said appliance when said plug is engaged with said adapter.

2. The switch system set forth in claim 1 wherein said first and second prongs lie in parallel, spaced apart planes, and said third prong lies in a plane transverse to the planes of said first and second prongs.

3. The switch system set forth in claim 1 wherein said third prong extends outwardly beyond said first and second prongs and so as to engage said contact arm before said first and second prongs engage said respective inlet contacts upon insertion of said plug into said adapter.

4. A remote control electrical switch system comprising: a single pole, double throw switch at an electrical appliance, an adapter having a pair of inlet contacts receivable in an outlet receptacle, a movable contact engageable with one of said inlet contacts, said appliance switch having a switch arm electrically connected to said movable contact and having two contacts electrically connected respectively to said inlet contacts, a plug selectively engageable with said adapter having first and second prongs engageable with said inlet contacts respectively, said plug further having a third prong engageable with said movable contact to hold said movable contact out of engagement with said one inlet contact, and a single

3,334,250

5

pole, double throw remote control switch having a switch arm electrically connected to said third prong and having two contacts electrically connected to said first and second prongs respectively, said appliance switch operable to control said appliance when said plug is disengaged from said adapter and either said appliance switch or said remote control switch operable to control said appliance when said plug is engaged with said adapter.

6

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