A device for facilitating the wiring of a switch in house wiring. The device consists of a block of insulating material having supply line terminals, load terminals, and switch terminals. The block contains one conductor connecting one of the line terminals directly to one of the load terminals. The block also contains a conductor connecting the other line terminal to one switch terminal and a conductor connecting the remaining switch terminal to the remaining load terminal. The terminals comprise screw-type binding posts for receiving wire ends.

6 Claims, 6 Drawing Figures
This invention relates to wire-connecting devices, and more particularly to a device for facilitating the wiring of a switch in house wiring circuits.

A main object of the invention is to provide a novel and improved switch connection box which is relatively simple in construction, which is easy to install, and which is substantially completely insulated so as to minimize hazards of electrical shock, or the like.

A further object of the invention is to provide an improved switch connection box which is inexpensive to manufacture, which is compact in size, which enables relatively unskilled persons to properly wire an electric switch between supply line wires and load wires safely and rapidly, and which enables the connections to be made thereto without requiring the use of special tools or special wire configurations.

A still further object of the invention is to provide an improved switch connection box for house wiring, the box being substantially completely insulated so that there are no exposed wire elements, and the device being arranged so that proper connections can be made without risk of mistake or shock hazard.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

FIG. 1 is a plan view of an improved switch connection box assembly constructed in accordance with the present invention with the outer box cover removed.

FIG. 2 is a cross-sectional view taken substantially on the line 2—2 of FIG. 1.

FIG. 3 is a cross-sectional view taken substantially on the line 3—3 of FIG. 1.

FIG. 4 is a cross-sectional view taken substantially on the line 4—4 of FIG. 3.

FIG. 5 is an enlarged cross-sectional detail view taken substantially on the line 5—5 of FIG. 1.

FIG. 6 is a perspective view showing the conductor elements employed in the main block portion of the switch wiring device of FIGS. 1 to 5.

Referring to the drawings, 11 generally designates a complete switch wiring assembly according to the present invention. The assembly 11 comprises an outer rigid box portion 12 which may be of any suitable shape, for example, may be of square shape, which is provided with a removable cover plate 13. The box 12 is generally similar to standard junction boxes commonly employed in house wiring for housing wire terminal connections. In accordance with the present invention, a connection block 14 is provided, the block 14 being of any suitable insulating material, such as plastic, porcelain, or the like, in which the connection conductor elements are integrally contained, such as by being molded therein. Thus, the block 14 contains a first conductor 15 comprising a main bar portion 16 integrally formed at its opposite ends with binding posts 17 and 18 and being integrally formed with a laterally extending arm portion 19 similarly provided with a first binding post 20 and formed with a branch portion 21 provided with a binding post 22, as shown in FIG. 6.

The branch portion 21 extends parallel to the bar portion 19 so that the binding posts 20, 22 are in side by side relationship.

Block 14 contains a second conductor member 23 which has a main bar portion 24 which is provided at its opposite ends with binding posts 25 and 26. A laterally extending bar portion 27 is integrally formed with the main bar portion 24, and the laterally extending bar portion 27 is provided at its end with a binding post 28.

The conductor members 15 and 23 are molded in the block 14 with their main bar portions 16 and 24 extending substantially parallel to each other and with their bar portions 19 and 27 projecting in opposite directions therefrom, so that the binding posts 20, 22 are located at one side margin of block 14 and the binding post 28 is located at the opposite side portion of the block.

A third conductor member 29 is molded in the block, such conductor member 29 having a main bar portion 30 which is located beneath and extends transverse to the bar portions 16 and 24. Bar portion 30 is integrally formed at one end thereof with a binding post 31 and has a laterally adjacent branch portion 32 provided with a binding post 33. Bar member 30 is provided at its opposite end with a binding post 34.

As will be apparent from FIG. 6, the intermediate portions of the conductor bar elements 16 and 24 are offset upwardly, whereas the transversely extending bar member 30 is offset downwardly, whereby the downwardly offset portion of bar member 30 is spaced a substantial distance away from the upwardly offset intermediate portions of the bar members 24 and 16 in the insulating block 14.

The block 14 is provided with tapped holes 35, 36 at opposite portions thereof located between the bar elements 24 and 16 for securing the blocks to the bottom wall of the box 12 by using suitable fastening screws, and block 14 is further provided with a tapped hole 36 at its central portion for receiving a fastening screw 37 engaged through a center hole in cover plate 13, whereby the cover plate 13 may be secured in covering position on the box 12, in the manner shown in FIG. 2.

As shown in FIG. 4, the binding posts 34 and 28 are located at one side edge of block 14, whereas the binding posts 31, 33 and 22 are located at the opposite side edge of said block. Similarly, the binding posts 25 and 17 are located at one of the remaining side edges of block 14 and the binding posts 26 and 18 are located at the opposite remaining side edge of block 14.

The binding posts are of the type having wire-receiving openings 40 in which the end of a wire may be inserted and having clamping screws 41 threadedly engaged in the top portions of the binding posts and being clampingly engageable with the wire ends inserted in the openings 40. As shown in FIG. 5, the block is recessed, in the manner illustrated at 42, in the block to receive the heads of the binding post screws 41. Also, as shown in FIG. 5, the outer ends of the apertures 40 are flush with the side edges of the block 14 and are preferably somewhat flared to facilitate the insertion of a wire end 45 into the wire-receiving aperture.

FIGS. 1 and 2 illustrate the manner in which the device is employed for wiring a switch into the house wiring system. Referring to FIG. 1, 50 designates a supply cable having supply conductors 51 and 52. Wires 51 and 52 are connected to the binding posts 33 and 20, respectively, in the manner illustrated in FIG. 5. Designated at 53 is an extension of the power supply cable having the conductors 54 and 55, which are respectively connected to the binding posts 31 and 22, thus
effectively connecting wires 51, 54 together and wires 52, 55 together. In conventional color coding, the wires 51, 54 are black and represent the "hot" conductors of the supply wires, whereas the wires 52, 55 are colored white and represent the grounded conductors of the wiring system. As will be readily apparent, cable 53 thus forms an extension of the supply cable 50 and may be used for wiring other portions of the system.

Designated at 60 and 61 are load cables having respective pairs of black and white conductors 62, 63 and 64, 65 leading to outlet receptacles to be simultaneously controlled by a switch. Wires 62 and 63 are respectively connected to the binding posts 25 and 17, and wires 64 and 65 are respectively connected to the binding posts 26 and 18, as shown in FIG. 1. This connects conductor member 15 to the white wires 52, 55, thus connecting the wires 63 and 65 to the grounded wires of the supply system. The intended switch is connected to the binding posts 34 and 28, the switch having a cable 66 containing the wires 67 and 68. Wire 67 is connected to a binding post 34 and wire 68 is connected to binding post 28. By this connection the switch is connected across the conductors 23 and 29, and thus is in series between the black supply wire 51 and the black load wires 62, 64. The switch can thus be employed to control the connection of the black wires 62, 64 to the black supply wire 51.

It will be noted that in the installation shown in FIG. 1 there are no exposed wire portions, and the wires are neatly connected to the block 14 in a manner requiring no twisting of the wires and require no crowding or handling of the wires in the box 12. The box is provided with conventional cable clamping means 70 for clamping the various cables thereto at their entry apertures. It will thus be seen that in the assembly above described and illustrated in the drawings the connections may be easily made with minimum shock hazard. The cover 13 is preferably imprinted with a wiring diagram and with proper instructions to indicate how the connections are to be made, so that by following such instructions the various wire ends may be connected to the proper binding posts, enabling the connections to be quickly and safely made. It will be further noted that there is no mechanical strain on the conductors when they are installed, since the clamps 70 firmly secure the cables to the box 12, preventing any pulling forces from being exerted on the various connection wires on the cables.

As above mentioned, in installing the above-described wiring, it is merely necessary to prepare the wire ends 45 by stripping off a short amount of insulation from the wire end portions and then inserting the wire ends in the proper binding posts, after which the wires are clamped to the binding posts by tightening the screws 41 by means of a screw driver. By following the printed instructions on the box cover 13, the required wiring may be quickly and efficiently performed.

It will be apparent that the device above described is inexpensive to manufacture, is of very simple construction and assembly, and is rugged and durable in use.

The assembly can also be employed as a junction box, as well as a switch box, if so desired, since by means of the assembly the incoming supply cable 50 may be connected to an outgoing supply cable 53, in the manner above described. It will also be apparent that the connections are made without requiring any soldering or twisting of wires, and without requiring the use of tape or other insulating means to cover the wires.

With a specific embodiment of an improved switch connection box for house wiring has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. In combination, a switch wiring device comprising an insulating body member provided respectively with a pair of supply line terminals, a pair of load terminals and a pair of switch terminals, a first conductor bar in said body member directly connecting one of the line terminals to one of the load terminals, a second conductor bar in said body member connecting the other line terminal to one switch terminal, a third conductor bar in said body member connecting the remaining switch terminal to the remaining load terminal, a pair of power supply wires detachably connected to said supply line terminals, and a switch having a pair of connecting wires detachably connected to said switch terminals, wherein the terminals comprise apertured binding posts provided with wire-clamping screws, wherein said binding posts are integrally formed on the conductor bars, wherein the second conductor bar extends transverse to the first conductor bar in the body member and is spaced therefrom, and wherein the binding posts are located substantially at the edges of the body member and are substantially flush therewith.

2. The structural combination of claim 1, and wherein the body member is of generally rectangular shape.

3. The structural combination of claim 2, and wherein the first and second conductor bars are provided with respective additional binding posts located at an edge of the body member for connection to extended supply line conductors.

4. The structural combination of claim 3, and wherein said additional binding posts are located adjacent the binding posts comprising the line terminals.

5. The structural combination of claim 4, and wherein the first and third conductor bars have portions extending substantially parallel to each other in the body member.

6. The structural combination of claim 5, and wherein said first and third conductor bar portions are offset away from the second conductor bar in the body member.

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