March 20, 1951 V. F. SCHMITT 2,545,898

GUTTER TERMINAL

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FIG 1

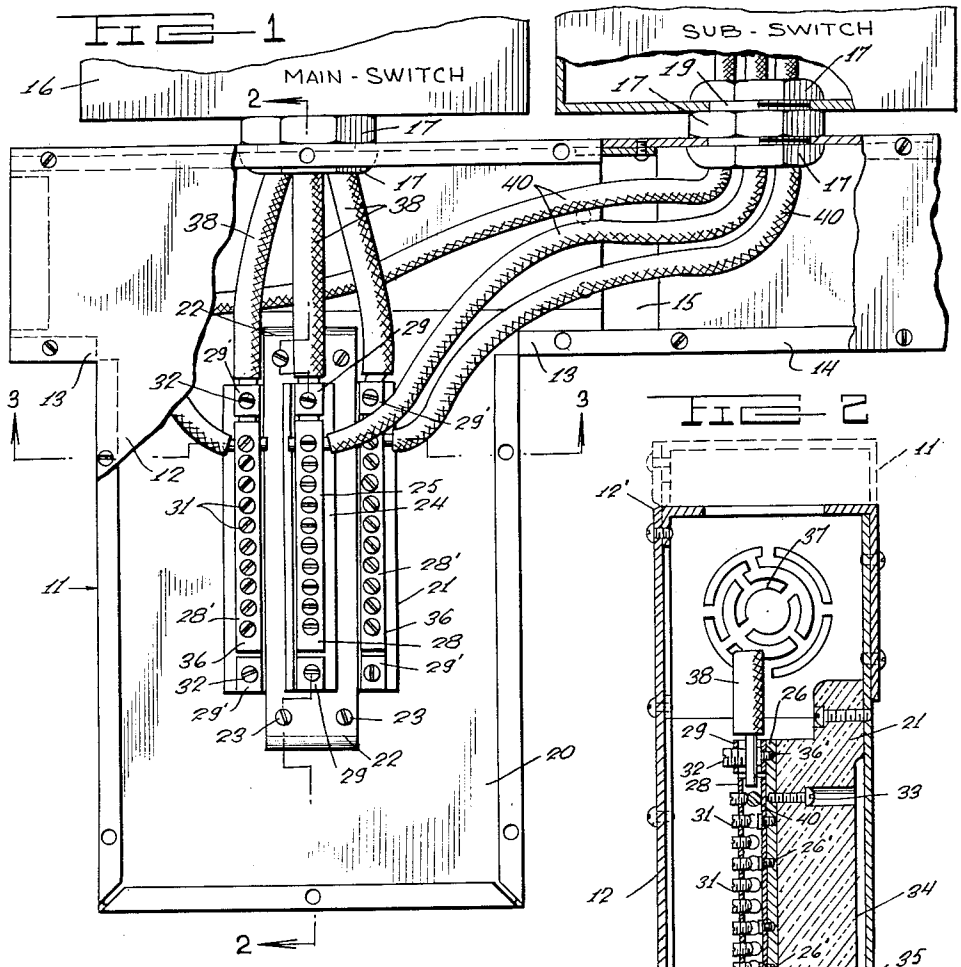
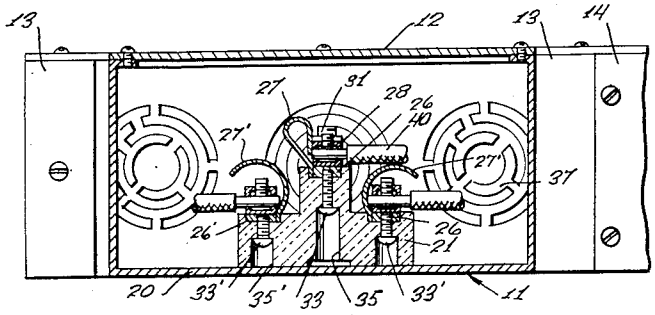


FIG 2

FIG 3



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GUTTER TERMINAL

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1 Claim. (Cl. 174—59)

1

This invention relates to electric circuit connectors, and more particularly to a circuit connecting device for use on electric switchboards and the like for connecting switch wires or other wires, wherein one or more subsidiary wires are to be electrically connected to a main wire.

A main object of the invention is to provide a novel and improved circuit connecting device for rapidly and conveniently connecting subsidiary wires to a main wire, said device being very simple in construction, being readily accessible for making connections, and providing secure mechanical and electrical connections.

A further object of the invention is to provide an improved wire terminal connecting device for use on switchboards or the like for connecting subsidiary wires to main wires, for example, for connecting subsidiary switches to main switches, said device being relatively inexpensive to manufacture, being easy to install, being protected against the entry of dirt or other foreign substances, being easily accessible for making connections, and eliminating the necessity of soldering and taping the connections.

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

Figure 1 is an elevational view, partly broken away, showing an improved wire terminal connecting device according to the present invention employed to connect terminal wires of a subsidiary switch to the terminal wires of a main switch;

Figure 2 is a cross-sectional view taken on line 2—2 of Figure 1;

Figure 3 is a cross-sectional view taken on line 3—3 of Figure 1.

Referring to the drawings, 11 designates a sheet metal housing provided with a removable cover 12. The housing 11 is formed at its upper portion with laterally extending wings shown at 13, 13 having removable ends, enabling the housing to be telescopically connected at said wings to an adjoining duct or housing 14, for example, by the use of a tubular sleeve 15 telescopically received within a wing 13 of the housing 11 and within an abutting portion of the duct or housing 14, whereby the duct or housing 14 may be secured to the housing 11 by fastening the sleeve member 15 within the abutting housing portions in the manner shown in Figure 1. Designated at 16 is the main switch box which is connected to the top end of the housing 11, as viewed in Figure 1, by a suitable nipple and lock nuts 17, as

2

shown. Designated at 18 is the housing of a subsidiary switch which may be secured to the duct or housing 14 by means of a nipple 19 and lock nuts 17 in the manner already described and illustrated in Figure 1.

The size and shape of the housing 11 is such that it fits in the standard gutter ways of conventional switchboard installations. The top of the housing may be secured either in an upwardly extended position, as shown at 11' in Figure 2, to fit a large standard gutter way, or in the full line position of Figure 2 to fit a smaller standard gutter way.

The bottom wall of the housing 11 is designated at 20. Designated at 21 is a block of porcelain or other suitable insulating material having end flanges 22, 22 which are secured to the bottom wall 20 by means of screws 23. Block member 21 is formed with a central, longitudinal rib 24, said rib being formed with a longitudinal groove 25. Secured in said groove is a longitudinally extending copper bar 26 and clamped between one longitudinal edge of the bar 26 and a wall of the groove 25 is a longitudinally extending, flexible fiber cover member 27. Secured to the copper bar 26 by screws 26' is a longitudinally extending, tubular, copper member 28 which is rectangular in cross-section, as shown in Figure 3. Secured to the end portions of the copper bar 26 by screws 36' are short, tubular, copper members 29, 29 which are aligned with the tubular member 28 and are preferably somewhat larger in size. The side walls of the tubular member 28 are formed with a plurality of registering apertures 30, and threaded into the top wall of the member 28 are respective set screws 31, the axis of each set screw 31 intersecting the transversely extending axis defined by a pair of opposing apertures 30, 30. The end members 29, 29 are similarly provided with set screws 32.

As shown in Figures 2 and 3, the copper bar 26 is secured in the groove 25 by screws 33, 33, extending upwardly through counterbores 35 formed in the bottom of the block 21. As shown in Figures 2 and 3, the bottom of the block 21 is recessed at 34 to define an air space.

The block 21 is formed laterally adjacent the rib 24 with longitudinal grooves 36, 36. Secured in each groove 36 is a copper bar 26' similar to the bar already described, and clamped in each groove 36 laterally adjacent the copper bar 26' is a fiber cover member 27' similar to the cover member 27. The bars 26' are secured to the block 21 by means of screws 33' extending upwardly through counterbores 35' formed in the

bottom of the block 21. Secured on the bars 26' are elongated, tubular members 28' similar to the members 28, and secured to the end portions of the bars 26' are smaller, tubular members 29' similar to the tubular members 29. The members 28' are formed with apertures 30 in their side walls and are provided with set screws 31 in their top walls in the same manner as the member 28. The members 29' are likewise provided with set screws 32 similar to the set screws provided in the members 29.

The side walls of the housing 11 may be suitably slotted to provide "knock-out" apertures, as shown at 37.

From Figure 1 it will be seen that the main switch terminal wires, shown at 38, may be connected to the bars 26 and 26' by engaging the ends of the terminal wires in the members 29' and 29 and clamping the wire ends by means of the set screws 32. The terminal wires from one or more subsidiary switches, for example, the wires 40, may then be respectively connected to the bars 26 and 26' by engaging the wire ends through respective registering apertures 30 in the respective members 28 and 28', and clamping said wire ends by means of the set screws 31. Any number of subsidiary wires may thus be connected to the main wires 38 in accordance with the number of sets of registering apertures 30 provided in the tubular members 28 and 28'. Rapid connections may be made inasmuch as it is merely necessary to loosen and tighten the set screws 31 in order to make the connections. If the required connections have been made, the cover members 27 and 27' may be disposed in overlying relationship to the connection tubes. While a connection is being made, the cover members may be held in unobstructing positions by engaging the side margins thereof against the adjacent side surfaces of the tubular connector members in the manner shown in the central portion of Figure 3.

It will be apparent from the above description that no soldering or taping of the wire ends is required. The connections are protected by a cover 12 which is fastened over the housing 11 and which excludes all dirt and other foreign material from entering the housing.

The housing cover 12 is made to fit either a housing of the size shown in full line view in Figure 2 or a housing which is larger in size, as shown by the dotted extension 11' in Figure 2. The cover 12 is formed with a V-groove 12' at its upper portion, whereby the top portion of said cover may be readily detached when the cover is to be employed with a housing of the size shown in full line view in Figure 2.

While a specific embodiment of a device for connecting subsidiary circuit wires to main circuit wires 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 claim.

What is claimed is:

In a wire connecting terminal of the character described, a housing, a base member of insulating material secured in said housing, said base member being formed with a channeled groove, a flat conductor mounted in said channeled groove, a short conductive tubular member secured to one end of said flat conductor, said short tubular member being provided with a longitudinal opening, a clamping screw threaded through its top wall and communicating with said opening for engagement with a wire end inserted in said opening, an elongated conductive tubular member secured to said flat conductor in axial alignment with and adjacent to the short tubular member, the side walls of said elongated tubular member being formed with a plurality of sets of oppositely registering apertures, each set of oppositely registering apertures being adapted to receive a wire end extending transversely through the elongated tubular member, respective clamping screws threaded through the top wall of the elongated tubular member in the transverse planes of the respective sets of oppositely registering apertures, and an elongated flexible sheath member of insulating sheet material clamped at one margin thereof between an edge of the elongated flat conductor and an inner side wall surface of the channeled groove, said sheath member being formed and arranged to overlie the tubular members.

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