

Oct. 10, 1939.

C. E. CARSON
ELECTRICAL CONNECTION

2,175,251

Original Filed Sept. 18, 1936

Fig. 1.

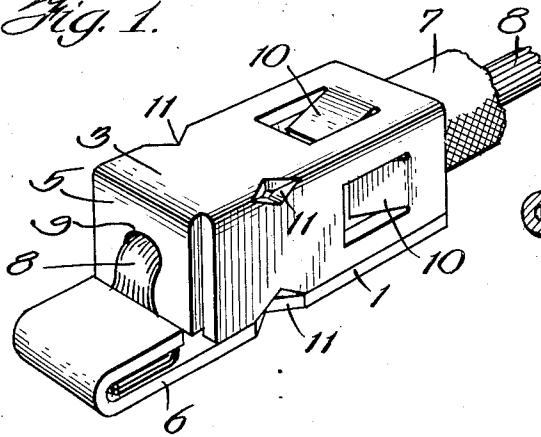


Fig. 2.

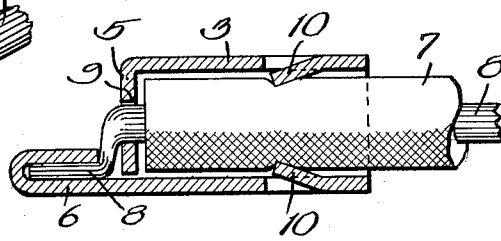


Fig. 4.

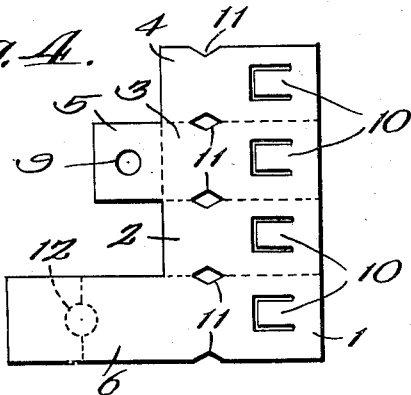


Fig. 3.

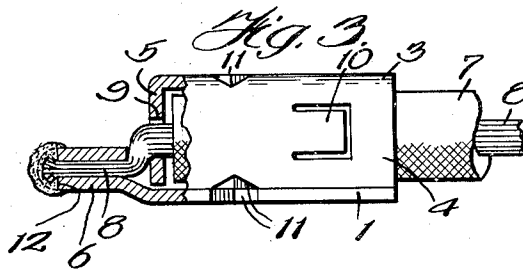


Fig. 6.

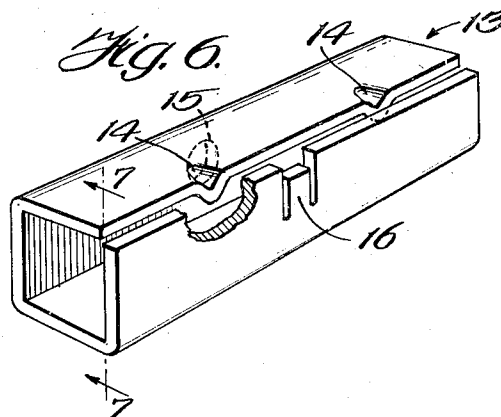


Fig. 5.

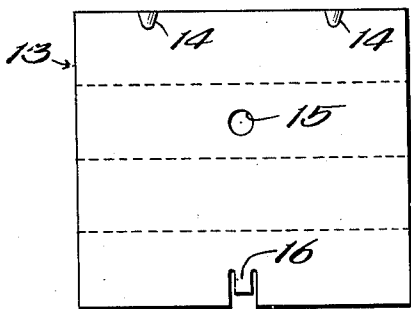


Fig. 8.

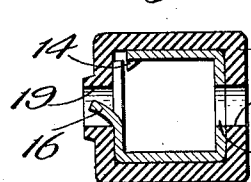


Fig. 9.

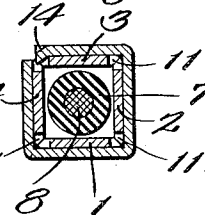
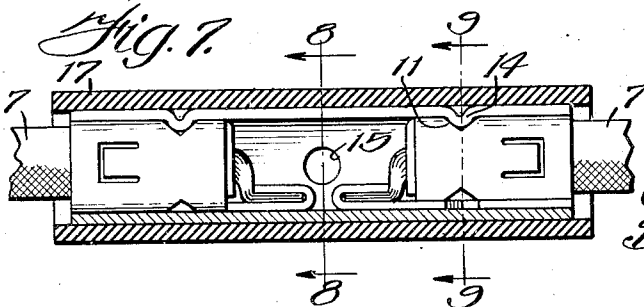


Fig. 7.



Inventor:
Charles E. Carson
By Langan Mm
Atty.

UNITED STATES PATENT OFFICE

2,175,251

ELECTRICAL CONNECTION

Charles E. Carson, Bronson, Mich., assignor to
Utility Patent Trust No. 17,938, Union
Guardian Trust Co., Detroit, Mich., a corpora-
tion of Michigan

Original application September 18, 1936, Serial
No. 101,361. Divided and this application
October 6, 1937, Serial No. 167,505

1 Claim. (Cl. 173-269)

This invention relates to improvements in electrical connectors and more particularly to an improved terminal to be secured to the end of an electrical conductor or wire for the purpose of making an electrical connection between said wire and a socket or connecting means to complete the electrical connection to another wire or electrical device.

This application is a division of this applicant's prior co-pending application, Serial No. 101,361, filed September 18, 1936, now Patent No. 2,143,645, January 10, 1939.

It is an object of this invention to provide a terminal of the character described that may be readily stamped from a sheet of metal and the blank so formed easily and readily shaped and attached, thereby reducing the cost of manufacture. It is a further object of this invention to so shape this improved terminal that when secured to the end of an electrical conductor it will provide a large contacting surface adapted to wipe over the socket or means which it engages thereby prolonging the life of the terminal, as it is self cleaning. It is another object of this invention to provide a terminal that is readily secured to the end of the electrical conductor with the connection to the bared strands of the conductor connected thereto by friction or solder and the insulated covering of the conductor engaged by a four point connection, whereby upon the flexing of the conductor the bared strands of wire secured to the terminal will be unaffected.

This improved terminal is of particular advantage for use in line connectors, in forming connections to industrial and automotive switches of the rotary, push and pull, as well as the toggle types, and to form connections to junction boxes, fuse blocks, and automotive and industrial lighting sockets.

With these and other objects in view reference is made to the accompanying sheet of drawings which illustrates a preferred form of this invention with the understanding that minor changes may be made without departing from the scope thereof.

In the drawing:

Figure 1 is a view in perspective of an embodiment of one form of this invention.

Figure 2 is a view in longitudinal, central, vertical section of Figure 1.

Figure 3 is a view similar to Figure 2 of a modified form of terminal.

Figure 4 is a plan view of the blank of metal from which this improved terminal is formed.

Figure 5 is a plan view of the blank of metal

from which one form of connector or socket to be employed with this improved terminal is formed.

Figure 6 is a view in perspective of the form of connector or socket formed from the blank 5 shown in Figure 5.

Figure 7 is a longitudinal, vertical sectional view taken on the line 7-7, Figure 6, illustrating two of the improved terminals in elevation engaged within the connector shown in Figure 6 10 and the connector encased within an insulating covering.

Figure 8 is a view in transverse section taken on the line 8-8 of Figure 7.

Figure 9 is a view in transverse section taken on the line 9-9 of Figure 7.

This improved terminal is stamped from a sheet of thin resilient metal in the form shown in Figure 4 and then with the portion 1 as a base is folded over to form a rectangular housing 20 square in cross section, as shown in Figure 1, with the top 3 projecting beyond the integral sides 2 and 4 bent downward at right angles to the base to form a perforated closure 5 with a portion 6 of the base 1, extending therebeyond. 25 in applying this terminal to an electrical conductor, the covering 7 of insulation is stripped at one end to bare the wire or wires 8 and is inserted in the open end of the housing with the bare wires 8 passing through the opening 9 in the closure 5 and the end of the insulation 7 abutting the inner side thereof. The free end of the extension 6 of the base is then bent back upon itself to enclose and grip the ends of the wires 8, as shown in Figures 1 and 2. The tongues 10 35 on each side of the housing are then forced inwardly to grip the insulation 7 to resist the removal thereof from the housing. The openings 9 and the tongues 10 on the base 1 and sides 2, 3 and 4 as well as the indentations 11 on each edge of the housing and base are all formed when the blank is stamped from the metal.

There are instances when it is required that the electrical connection between the conductor and terminal be soldered. In adapting this terminal to such requirements the free end of the portion 6 of the base is provided with a circular opening 12, formed when the blank is stamped from the sheet of metal, as shown in dotted lines in Figure 4, and the end of the wires 8 pass 50 therethrough as the end is bent back upon itself. In this form it is preferable to strike up the portion 6 from the base 1 as shown in Figure 3. After the portion 6 has been completely bent back upon itself a drop of solder is applied to the 55

conductors 8 passing through the opening 12 and the body about said opening, as indicated in dotted lines in Figure 3.

In carrying out this invention and adapting this terminal to a connection, a resilient socket to snugly receive the terminal is necessary. Figures 6 to 9 inclusive illustrate a socket or connector of this character to provide a line connector. It is preferable to form this connector from a blank of proper dimensions struck from a sheet of the same metal as the terminal. It is preferable to stamp such a blank 13 in the shape illustrated in Figure 5. The blank is then folded upon itself to form a rectangular socket square in cross section, as shown in Figure 6. One edge of the blank is provided with indentations 14 causing the body of the connector to protrude within the interior thereof opposite each indentation. These indentations are preferably arranged at a distance from the ends of the connector approximately the same as the distance between the open end of the housing of the terminal and the indentations 11 upon the edges thereof. The side of the connector next adjacent the indentations 14 is provided with a central circular opening 15 and the edge of the connector opposite the indentations is cut away to form a tongue 16, as shown in Figure 6. It is preferable to provide the socket or connector so formed with a surrounding sleeve or insulating material as shown at 17 in Figure 7. This sleeve may either be rectangular or cylindrical upon its exterior and is provided with a square passageway to receive the metallic socket or connector. The sleeve 17 is provided with circular openings 18 and 19 on opposite sides thereof so that when the connector is inserted therein a tool may be inserted through openings 18 and 15 to engage the tongue 16 and bend the same to cause its free end to enter into the opening 19, as shown in Figure 8, and thereby secure sleeve and connector to each other in proper relation. It is preferable to form a slight boss about the opening 19, as shown in Figure 8.

The metallic socket is formed so that the edges do not overlap and when the improved terminal is inserted within the connector, as shown in Figure 7, it will be snugly received therein with the four sides of the socket sliding over the four sides of the terminal. As the protuberance formed by the indentations 14 of the socket engages the square edge of the terminal it will resist the further entrance of the terminal but the

connector being of thin metal and resilient the protuberance will wipe over the edge until it engages in the indentation 11 upon the terminal and will firmly hold the terminal within the connector and press the terminal against the near walls of the connector, as shown in Figure 9, and may be withdrawn therefrom when sufficient pulling force is exerted to cause the protuberance to wipe over the edge of the indentation 11 and edge of the terminal.

Of course it is to be understood that terminals of various sizes are to be provided to receive electrical conductors of various types, and sockets or connectors are to be provided for each size of terminal. Likewise, both terminal and connector are stamped from sheets of resilient metal and during the stamping the shape, perforations, indentations and cut out portions are stamped at the same time and the articles are formed by machinery from the blanks so produced. While the improved terminal is illustrated in connection with a connector to be employed as a line connector, it is not limited to this use alone. This terminal and socket or connector are adaptable to any use wherein a snap connection with a wiping self cleaning electrical contact is desired.

While Figures 7 and 8 illustrate the inner walls of the sleeve 17 in close contact with the outer walls of the resilient socket, it is to be understood that in practice sufficient clearance is provided to allow the socket to expand when the terminal is inserted therein.

What I claim is:

The method of securing a terminal upon an insulated electric conductor and forming an electrical connection between the terminal and conductor consisting in baring the end strands of wires comprising the insulation covered conductor, embracing the insulation covered end of the conductor by a flexible metallic housing forming the electric contact of the terminal, said housing including an integral perforated end closure and a projection extending beyond the closed end of the housing, passing the bared strands of the conductor wires through the perforated end closure of the housing to rest upon the housing projection for a portion of its length and bending the remaining free portion of the projection back over the ends of the bared strands and clamping the bent back portion to secure the strands upon said projection.

CHARLES E. CARSON.