Dec. 24, 1963 E. LASKOWSKI 3,115,244

WIRE CONNECTOR ASSEMBLY

Filed Dec. 29, 1960

Fig. 1.

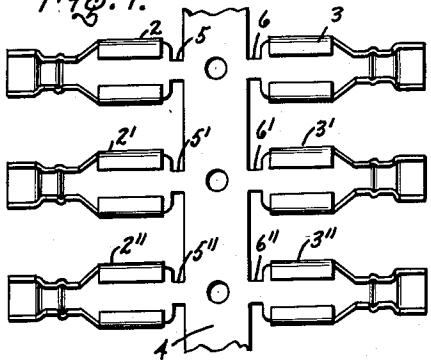
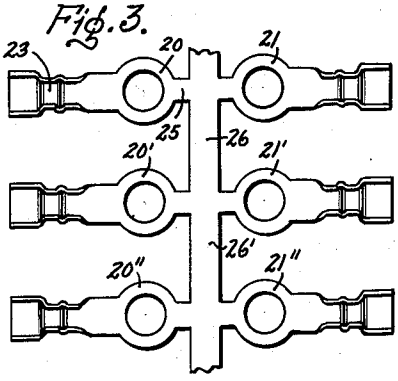


Fig. 3.



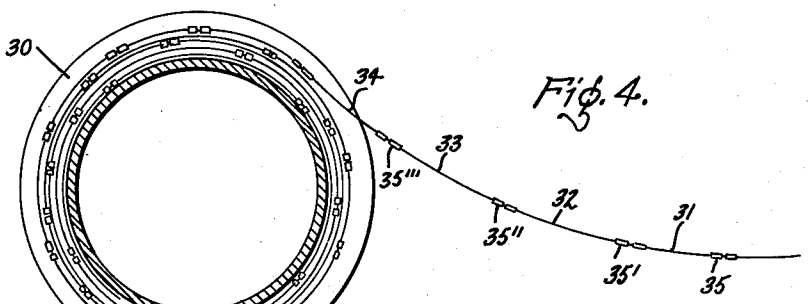


Fig. 4.

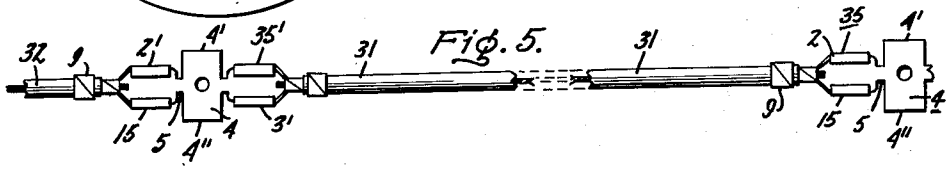


Fig. 5.

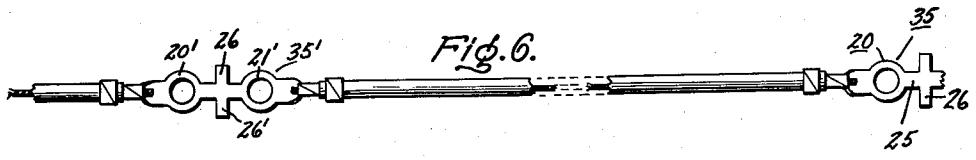


Fig. 6.

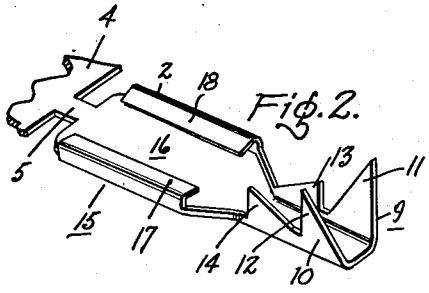


Fig. 2.

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3,115,244

WIRE CONNECTOR ASSEMBLY

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3 Claims. (Cl. 206—56)

The present invention relates to wire connector assemblies and more particularly, to wire connector assemblies for use in wiring electrical apparatus.

Heretofore, in fabricating wire leads having terminals for use in wiring electrical apparatus, individual wire leads of a given length and wire gage are stripped of their insulation at their ends and terminals are mounted thereon. Usually, the terminals are supplied attached to long connecting strips in such a manner that as the terminals are utilized, they can be broken from the connecting strip. In the event that a particular apparatus requires a plurality of wire leads having different lengths and/or different wire gages, each size of wire lead with the terminals attached is suitably fabricated and usually stored in large numbers in storage bins for use.

An apparatus is usually wired by providing a technician with a suitable chart upon which is noted the wiring sequence and the particular wire lead which should be utilized for the operation. Upon determining the necessary lead for a wiring operation, the technician locates the appropriate storage bin, selects the desired wire lead, and performs the connection of the terminals in the apparatus. This cumbrous operation is repeated for each set of connections.

The chief object of the present invention is to provide a continuous supply of wire leads having terminals attached thereto.

Another object of the invention is to provide a plurality of wire leads having novel terminals attached thereto to form a continuous length of wire leads connected by the terminals.

A further object of the invention is to provide an improved terminal assembly for use in fabricating wire-connector assemblies.

A still further object of the invention is to provide a terminal assembly for supplying a plurality of terminals for use in fabricating a continuous lengh of wire leads.

These and other objects of my invention may be more readily perceived from the following description.

One of the features of my invention is a wire connector assembly including a plurality of wire leads of varying lengths and wire gages connected in a continuous length by terminal assemblies, each terminal assembly including two terminals in alignment having connecting portions located between the mounting portions of each terminal.

The attached drawings illustrate preferred embodiments of the invention, in which:

FIGURE 1 is a plan view of a terminal assembly for use in practicing the present invention;

FIGURE 2 is a perspective view of a terminal which may be utilized in the terminal assembly in FIGURE 1;

FIGURE 3 is a plan view of another embodiment of a terminal assembly which may be utilized in practicing the present invention;

FIGURE 4 is a view of a spool having wound thereon

a wire-connector assembly in accordance with the present invention;

FIGURE 5 is a view of the wire-connector assembly shown in FIGURE 4 utilizing the terminal assembly shown in FIGURE 1;

FIGURE 6 is a view of a wire-connector assembly shown in FIGURE 4 utilizing the terminal assembly shown in FIGURE 3.

In FIGURE 1 there is shown a terminal assembly which includes a plurality of connected terminals divided into two parallel groups. Terminals 2, 2', 2'', etc., are located parallel and adjacent one another and similarly terminals 3, 3', 3'', etc. are located parallel and adjacent one another. Terminals 2, 2', 2'' may be connected to longitudinal strip 4 by means of suitable connecting portions 5, 5', 5''. Connecting portions 6, 6', 6'', etc., may connect terminals 3, 3', 3'' to strip 4. In this embodiment, individual terminals of the first group are in alignment with individual terminals of the second group. For example, terminal 2 is in alignment with terminal 3.

In FIGURE 2 there is shown a perspective view of a typical terminal utilized in FIGURE 1. Basically, the terminal comprises a wire engaging portion 9 and a mounting portion 15. Wire engaging portion 9 is adapted to be attached to a suitable wire lead which electrically connects the wire lead to the terminal. Mounting portion 15 is adapted to be connected to a suitable protuberance extending from the apparatus to be wired. In the embodiment in FIGURE 2 wire engaging portion 9 comprises ferrule portion 10 having extending therefrom two tapered ears 11 and 12. In this embodiment, ears 11 and 12 are intended to be wrapped around the insulation portion of the wire lead which usually comprises a conductor covered by an insulation portion. Usually, at the ends of the wire leads the insulation is removed to expose a portion of the conductor. Adjacent ears 11 and 12 of the wire engaging means is another pair of tapered ears 13 and 14 adapted to be wrapped around the bare conductor portion of the wire lead. It will be appreciated that other means for engaging the wire lead may be utilized while practicing the invention. For example, such a terminal may include a wire mounting portion which is tubular in shape and which is adapted to be crimped to engage the bare conductor.

Mounting portion 15 of the terminal may comprise a flat planar portion 16 having extending therefrom a pair of flanges 17 and 18 which are adapted to engage a suitable protuberance in the apparatus to be wired, the protuberance during attachment to extend between flat portion 16 and flanges 17 and 18. In FIGURE 2 it is also noted that connecting portion 5 which connects the terminal to strip 4 is of a smaller width than the width of the mounting portion 15. If desired, the terminals and connecting portions may be fabricated from a single strip of metal.

In FIGURE 3 there is shown another embodiment of the invention wherein the terminal assembly comprises a plurality of terminals 20, 20', 20'' which are located parallel to one another and these terminals are mounted adjacent to and in alignment with a second group of terminals 21, 21', 21''. These terminals are spaced from one another in a manner similar to that shown in FIGURE 1 and are connected in pairs; terminal 20 being connected to terminal 21 by connector portion 25, and

adjacent pairs of terminals, for example, 20' and 21' are connected by suitable connection portions 26. If desired, connector portions may be fabricated from a single strip of material and preferably the terminals and connecting portions are fabricated from a single strip of material. If otherwise desired, separate connecting portions 26 may be utilized to suitably attach the terminal assembly comprising terminals 20 and 21 with connector means 25.

In the embodiment of FIGURE 3 the terminals comprise a wire engaging portion 23 which is connected to a mounting portion 29 which has a general eyelet-shape and is adapted to be attached by bolt means at the points of connection.

In FIGURE 4 there is shown a spool 30 upon which is mounted a plurality of conductors which are connected by the terminal assemblies detached from the continuous terminal assemblies illustrated in FIGURES 1 and 3. This may be achieved by severing the longitiudinal strip 4 between terminal assemblies in FIGURE 1 or by severing the connection strip 26 in FIGURE 3. A preferred method and apparatus for mounting terminals on wire leads and severing pairs of terminals from a strip is illustrated and described in my copending application entitled, "Method and Apparatus for Forming Wire-Connector Assemblies," Serial No. 79,449, filed December 29, 1960.

As previously mentioned, to wire apparatus in a manner wherein large numbers of wire leads of different lengths and different wire gages having suitable connectors are individually selected is burdensome and inefficient. In shop operations where a small number of apparaus are being wired, probably the wire leads are individually cut and the terminals attached by hand. This may be performed by a wiring technician in such a manner wherein he refers to a wiring chart which informs him of the sequence of operations with the lead size and length, and connecting points for the terminals.

Where larger production requirements are present, it is common for all the wire leads to be prefabricated, that is, wires are cut to a predetermined size, stripped, terminals are attached, and the wire leads with terminals are suitably stored. A wiring technician then by reference to a wiring chart selects the wires from storage bins and connects them in accordance with the sequence outlined by the chart.

The present invention envisions supplying terminals in large numbers attached to strips and connected in pairs, preferably in aligned pairs, which may be severed from the strip, the pairs being suitably connected so that the wires are connected into a continuous length. In FIGURE 4 there is shown a spool 30 whereon wire leads of varying wire gages and lengths are connected into a continuous length so that all the wires required to electrical-wire a given machine are connected to one another in a desired sequence. This sequence may be repeated to permit a wiring technician to connect the terminals on a plurality of apparatus. In FIGURE 4 wire leads 31, 32, and 34 are attached by connector assemblies 35, 35', 35'', 35''', these connector assemblies may be formed from the terminal assembly illustrated in either FIGURE 1 or 3.

An enlarged view of a portion of the wire-connector assembly shown in FIGURE 4 is shown in FIGURE 5. In this embodiment the terminal assembly illustrated in FIGURES 1 and 2 is utilized. It can be seen that connector assembly 35 comprises a terminal 2 which is connected by means of connector portion 5 to a portion of the longitudinal strip 4 which is illustrated in FIGURE 1. However, this strip has been severed at a point between the terminals as shown in the terminal assembly in FIGURE 1 so that strip 4 now comprises two protuberances 4' and 4'' which extend beyond the width of the mounting portion 15 illustrated in FIGURE 2. The strip 4 may be severed by hand or if desired, the apparatus described in my previously mentioned copending application may be utilized. Terminal 2 is connected at wire engaging portion 9 to wire 31. Wire lead 31 has connected at its other end terminal assembly 35' which comprises another pair of terminals 2' and 3' which are connected by means of connecting portions 5' and 6' to a portion of strip 4 which also has protuberances 4' and 4'' extending beyond the mounting portions of the terminals. Terminal 2' is also connected at its wire engaging portion to wire lead 32.

In FIGURE 6 there is shown another embodiment of the wire-connector assembly illustrated in FIGURE 4. In this embodiment, the terminals shown in FIGURE 3 are utilized as connector elements. In FIGURE 6, terminal 20 has attached thereto connector portion 25 which has extending therefrom protuberances 26 and 26' which extend beyond the width of the eyelet portions of the individual terminal. The protuberances are portions of the connecting portions 26 illustrated in FIGURE 3 which connects adjacent pairs of terminals to form the terminal assembly shown in FIGURE 3. Connector assembly 35 includes terminals 20 and 21, terminal 20 being connected to wire lead 31 which has on its other end wire connector assembly 35' including terminals 20' and 21'.

The present invention is directed to a wire-connector assembly which comprises a plurality of wires connected by a connector assembly which comprises a pair of terminals having connecting means to permit the fabrication of an assembly including a plurality of wires connected in a continuous length. The present invention also is directed to terminal assemblies which include a large number of terminals adapted to be severed from the assembly for use in providing the terminals and the connecting assemblies in the previously described wire-connector assembly.

While I have described preferred embodiments of my invention, it will be understood that my invention is not limited thereto, since it may be otherwise embodied within the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A continuous connector-wire assembly of indeterminate length comprising a plurality of connector assemblies, a plurality of wires each serially connecting a successive pair of connector assemblies, each of said connector assemblies including a pair of electrical terminals and an intermediate portion connecting said terminals, each of said terminals including a mounting portion at one end joined to said intermediate portion and a wire-engaging portion at the other end, one end of each of said wires being attached to the wire-engaging portion of one of said connector assemblies, the other end of each of said wires being attached to the wire-engaging portion of the next successive connector assembly.

2. A continuous connector-wire assembly as defined in claim 1 wherein each of said wires is of desired gage and length, said wires being serially arranged in a predetermined sequence to provide said continuous connector wire assembly wherein each of said wires, having a terminal on each end thereof, is available in a predetermined sequence to facilitate wiring of electrical apparatus.

3. A continuous connector-wire assembly of indeterminate length comprising a plurality of connector assemblies, a plurality of wires of desired gage and length each serially connecting a successive pair of connector assemblies, each of said connector assemblies including a pair of electrical terminals and an intermediate portion integral with said terminals, each of said terminals including a mounting portion at one end integrally joined to said intermediate portion and a wire-engaging portion at the other end, said intermediate portion comprising a thin, severable member, one end of each of said wires being attached to the wire-engaging portion of one of said connector assemblies, the other end of each of said wires being attached to the wire-engaging portion of the

next successive connector assembly, said wires being serially arranged in a predetermined sequence to provide said continuous connector-wire assembly wherein each of said wires, having a terminal on each end thereof, is available in a predetermined sequence to facilitate wiring of electrical apparatus.

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