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H. A. DOUGLAS

1,982,501

CONNECTING MEANS

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Fig. 1

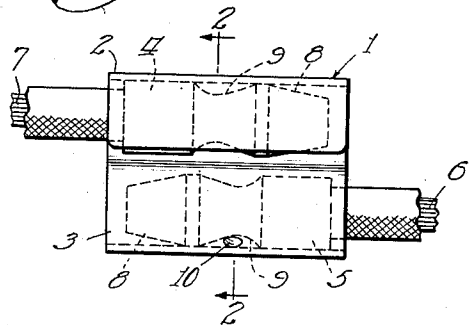


Fig. 2

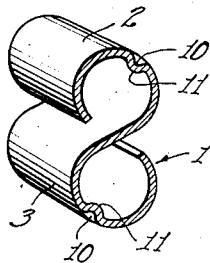


Fig. 3

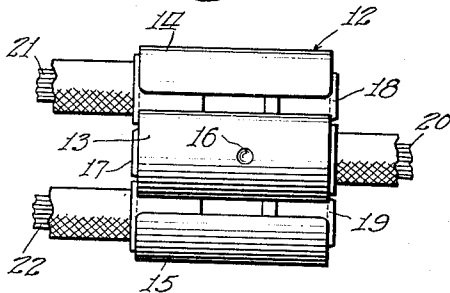


Fig. 4

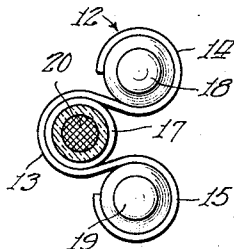
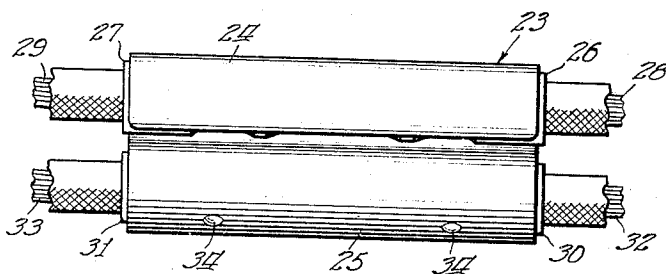


Fig. 5



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UNITED STATES PATENT OFFICE

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CONNECTING MEANS

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4 Claims. (Cl. 173—328)

This invention relates to connecting means more particularly for electrical conductors and is of particular utility in providing an efficient line connector for current conducting wires.

Among other objects, the invention aims to provide a simple and economical connector for a plurality of metallic line terminal plugs which may be conveniently made from one piece of sheet metal and in which the resiliency of the metal provides means for yieldingly engaging the plugs.

The invention will be more fully explained by reference to the accompanying drawing, in which—

Figure 1 is a side elevation showing one embodiment of my invention used as a two-wire connector.

Figure 2 is a sectional perspective view showing the structure of Figure 1 with the terminal plugs removed, the section being taken on the line 2—2 of Figure 1;

Figure 3 is a side elevation of another embodiment of my invention adapted for use as a three-wire connector;

Figure 4 is an end view of the structure of Figure 3, the wire being shown in section; and

Figure 5 is a side elevation of another embodiment of my invention adapted for use as a four-wire connector.

Referring in detail to the figures of the drawing, I have shown in Figures 1 and 2 a connector 1 formed of a single sheet of resilient metal such as brass bent upon itself in an ogee curve (as best shown in Figure 2) to form two sleeves 2 and 3. These sleeves are generally cylindrical and are partially closed so that the resiliency of the metal may be availed of to yieldingly receive the metallic wire terminal plugs 4 and 5. The plugs 4 and 5, which constitute metallic terminals for the insulated current conducting wires 6 and 7 respectively, are generally cylindrical and may be formed with the conventional bulbous tips 8 at the base of which is an annular groove 9 transverse to the plugs. The sleeves 2 and 3 receive the plugs 4 and 5 respectively with a snug yielding fit and thus the connector 1 provides a two-wire connector for the two wires 6 and 7. The wire 6 may be connected, for example, with a battery (not shown) and the wire 7 with a current consuming device such as an electric lamp (not shown), the connector 1 completing the circuit from the battery through the lamp, the battery and lamp being grounded when the connector is used with the electrical system of a motor vehicle, for example, as is well known in the art.

To enhance the security of attachment of the connector 1 and the plugs 4 and 5, the sleeves 2 and 3 are desirably indented as by the prick-punch indentations 10 which provide internal detents 11 in each sleeve. The bulbous tips 8 may be slipped into the sleeves and over the detents 11 which are thus yieldingly snapped into the grooves 9. The wires 6 and 7 may be readily separated from the connector 1 by pulling firmly upon the wires.

As shown in Figures 3 and 4, my improved connector is readily adapted for a three-wire connector by bending the single sheet of resilient metal 12 in a double ogee curve (as best shown in Figure 4) to form three triangularly disposed sleeves 13, 14 and 15 each having an indentation 16 therein similar to the indentations 10. Since each of the sleeves 13, 14 and 15 are partially closed, the resiliency of the metal of the connector 12 is availed to yieldingly receive the terminal plugs 17, 18 and 19 which constitute terminals for the insulated wires 20, 21 and 22 respectively. The wire 20 may be connected with a grounded battery and the wires 21 and 22 each connected with a grounded electric lamp, for example, the connector 12 thus completing parallel circuits from the battery through each of the lamps. Since these circuits are readily understood, they are not shown herein.

In the structures thus far discussed each of the sleeves is parallel to and abreast of each of the other sleeves, but it will be readily understood that the connector could be lengthened so as to receive the plugs end to end instead of abreast.

For example as shown in Figure 5, the connector 23 is again formed of a single sheet of resilient metal bent upon itself in a single ogee curve as is the connector 1, but the connector 23 is made substantially twice as long as the connector 1 so as to form two pairs of partially closed sleeves 24 and 25, the sleeves of each pair being coaxial and the pairs of sleeves being parallel and abreast. Thus the pair of sleeves 24 receive the metallic terminal plugs 26 and 27 which constitute terminals for the insulated wires 28 and 29 respectively, the plug 26 being inserted in the sleeve 24 from one direction and the plug 27 from the opposite direction. Similarly, the pair of sleeves 25 receive the metallic terminal plugs 30 and 31 which constitute metallic terminals for the insulated wires 32 and 33 respectively. The connector 23 may be provided with the indentations 34 at each end of each pair of sleeves to engage each of the ter-

minal plugs 26, 27, 30 and 31. Thus the connector 23 provides a four-wire connector, the wire 28 for example being connected with a grounded battery and wires 29, 32 and 33 each with an electric lamp.

My invention advantageously provides a simple and economical connector which at the same time is highly efficient since the intimate yielding grip of the sleeves upon the terminals over an extended area effects a superior electrical connection with a minimum voltage drop.

Having described exemplary embodiments of my invention, I claim:

1. As an article of manufacture, a connector comprising a single sheet of resilient metal bent upon itself in a series of continuous ogee curves to form a plurality of triangularly disposed parallel spring sleeves each having a longitudinal opening therein.
2. As an article of manufacture, in combination; a three-wire connector comprising a single sheet of resilient metal bent upon itself in a series of continuous ogee curves to form three

partially closed parallel cylindrical spring sleeves with the longitudinal edges of the outer sleeves spaced apart from the intermediate sleeve; a metallic terminal plug in each sleeve, one plug being inserted from one direction and the other two plugs from the opposite direction, said plugs having annular grooves therein; and an indentation in each sleeve providing an internal detent disposed in said groove.

3. As an article of manufacture, an electrical connector comprising a single sheet of resilient metal bent centrally upon itself to form a resilient open sided electric conductor plug sleeve with each side continued in a reverse curve to form similar sleeves parallel to the intermediate sleeve.

4. The structure of claim 3 wherein the opposite ends of the sheet forming a part of the outer sleeves terminate in longitudinal edges spaced apart from and parallel to the intermediate sleeve.

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