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A. G. LAZZERY
ELECTRICAL CONNECTOR
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Fig. 1.

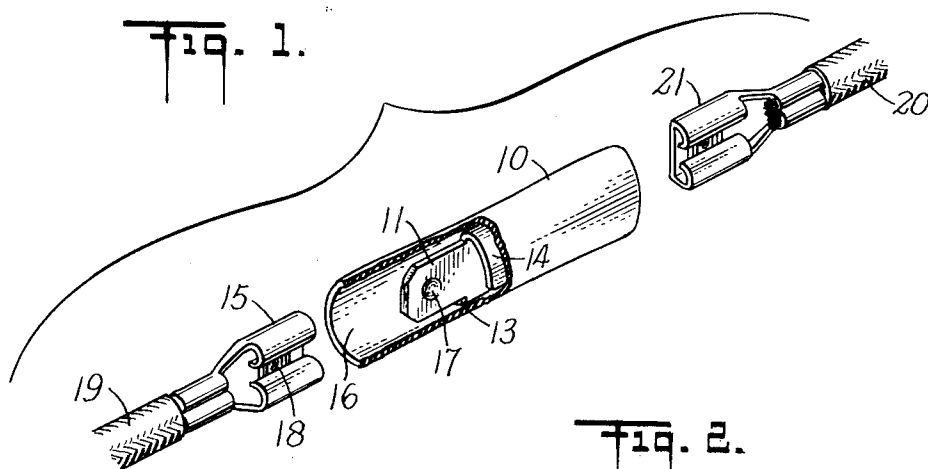


Fig. 2.

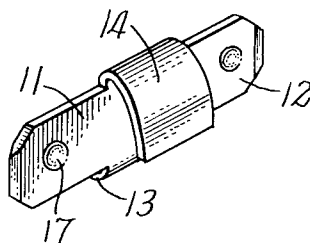


Fig. 3.

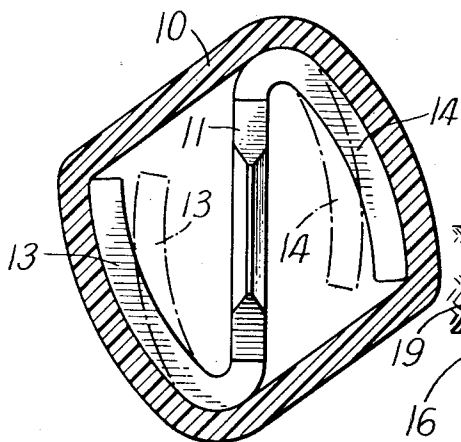
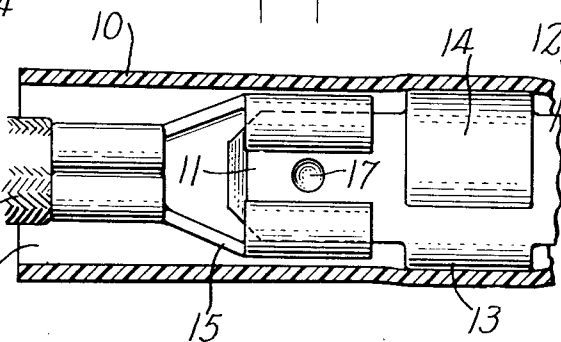


Fig. 4.



INVENTOR
Angelo Gino Lazzery
BY
Curtis, Morris & Safford
ATTORNEYS

UNITED STATES PATENT OFFICE

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ELECTRICAL CONNECTOR

Angelo Gino Lazzery, Oaklyn, N. J., assignor to
Aircraft-Marine Products, Inc., Harrisburg, Pa.,
a corporation of New Jersey

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2 Claims. (Cl. 339-221)

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The present invention relates to an improvement in electrical connectors. One object thereof has been to provide a connector which, when employed to connect two wires end to end, for example, fully insulates terminals attached to the ends thereof and the contact member through which they are electrically joined.

A further object of the invention has been to provide a fully insulated contact which is securely retained in a relatively unyielding insulating sleeve against endwise displacement when terminals are moved into and out of connecting engagement therewith.

A further object has been to provide a connector which affords fully effective insulation for the contact piece and for the terminals joined thereto and which permits said terminals to be quickly and easily connected to and disconnected from said contact.

A connector according to my invention includes an insulating sleeve of tough rugged relatively unyielding plastic and a contact having a terminal engaging portion at each end and retaining clips between said ends which extend outwardly in opposite directions and closely engage opposed inner surface portions of said sleeve to retain the contact securely therein.

Other objects and important features of the invention to which reference has not been made hereinabove, will appear in the following description and claims.

Although in the accompanying drawings I have shown a preferred embodiment of my invention and have described the same and various modifications thereof in this specification, it is to be understood that these are not intended to be either exhaustive or limiting of the invention, but, on the contrary, are chosen for the purposes of illustrating the invention in order that others skilled in the art may so fully understand the invention, its principles and the application thereof, that they may embody it and adapt it in numerous forms, each as may be best suited to the requirements of its particular use.

In the drawings:

Figure 1 is a view in perspective of a connector embodying the present invention and including an insulating sleeve shown with a portion thereof broken away to disclose a contact positioned therein to engage and connect the terminals of two wires when said terminals are inserted through the ends of said sleeve;

Figure 2 is a view in perspective of the contact shown in Figure 1;

Figure 3 is an end elevation on enlarged scale, 55

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of the connector mounted in an insulating sleeve as seen in Figure 1; and

Figure 4 is a fragmentary view with portions removed showing a terminal engaged with one end of a contact and both enclosed within an insulating sleeve.

In the embodiment of the invention shown in Figure 1, a contact member is mounted in an open end tube or seamless sleeve 10 of suitably non-yielding insulating material. For use under conditions where temperatures up to 160° Fahr. are likely to be encountered, a preferred material for this purpose is a polyvinyl chloride product which, when employed for purposes of the present invention, has the characteristic of resisting distortion at temperatures up to 160° Fahr. Materials which are otherwise acceptable and having lower distortion points, i. e. which are easily distortable at lower temperatures, may also be used under conditions involving correspondingly lower maximum temperatures. It is advantageous in all cases to employ an insulating substance which under all conditions is tough and durable.

A contact piece comprising terminal engaging end portions 11 and 12 is provided with sleeve engaging clips 13 and 14 which, as shown in Figure 3, extend in opposite directions from the lateral edges of the contact and bear snugly against opposed inner surface portions of sleeve 10. Thus said contact is held securely in position in said sleeve with its terminal engaging parts substantially coaxial with the longitudinal axis of the sleeve and readily accessible to receive terminals mounted on wires to be electrically connected. For example, terminal 15, as shown, is one of various types adapted to this purpose and, in use, is effectively engaged with the contact end 11 by inserting its free end through the end opening 16 of sleeve 10 and then sliding the clip portion of said terminal into embracing engagement with said contact end 11. A dimple deformation 17 in said contact end engages with an oppositely directed deformation 18 in terminal 15 to releasably retain said parts by friction in operative connected relation.

Referring again to Figure 3, the clips 13 and 14 are also shown in dotted lines which represent their respective initial positions when the contact is inserted through an open end of sleeve 10 and moved to an approximately mid-portion thereof. The contact piece is fixed or permanently positioned in said portion of sleeve 10 by displacing the free ends of said clips 13 and 14 outwardly from their initial dotted line positions and pressing them firmly against inner surface portions

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of the sleeve 10 to their full line positions. A simple and effective expedient for this purpose involves the use of tapered spreaders, not shown. Thus, where the spreader ends are inserted through the open ends of sleeve 10 and under the free ends of clips 13 and 14 (dotted position, Figure 3), said clip ends are displaced outwardly as the spreaders are pushed longitudinally into the sleeve.

The insulated contact above described is advantageously employed to releasably connect conductors, as the wires 19 and 20, through the terminals 15 and 21 when the latter are engaged with the contact ends 11 and 12 respectively. This is effected, as in the case of terminal 15, for example, by inserting the free end thereof through the adjacent open end of sleeve 10 and pushing said terminal and said contact toward each other to the relative positions shown in Figure 4. For effective operation, the dimensions of these parts are such that the terminal 15 slides freely through the sleeve opening into engagement with the contact which is in fixed or rigidly retained position in said sleeve. Terminal 21 is similarly engaged with contact end 12 to complete the connection between wires 19 and 20. To facilitate the terminal-contact engagement just described, outer end edge portions of the contact ends 11 and 12 are beveled or tapered, as seen more clearly in Figure 3.

The connector parts above described provide an effective and easily operated disconnect, or readily releasable connection, wherein all the metal parts are fully insulated by sleeve 10 which also tends to prevent accidental disconnection.

From the foregoing it is apparent that the connectors, terminals and connecting elements described above are well suited to attain the ends

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and objects herein directly and indirectly set forth and that they can be manufactured easily by conventional fabrication techniques, and that the various features and arrangements of parts can be modified readily so as best to suit a particular use. Certain features of the disclosure may be used to advantage in particular applications without a corresponding use of other features, and the elimination or modification of such features is to be construed as within the scope of this invention unless specifically excluded by the following claims or required by the scope of the prior art.

I claim:

1. Electrical connector comprising an insulating sleeve open at both ends and a contact comprising a terminal engaging portion provided at one longitudinal edge with a clip having its free end overlying and spaced from one face of said portion and at the opposite longitudinal edge with a clip having its free end overlying and spaced from the other face of said portion, said portion being positioned coaxially in said insulating sleeve and said clips being in frictional engagement with opposite interior surfaces thereof to hold the contact securely in operative position therein with the opposite end portions of the sleeve extending beyond the corresponding ends of said contact.

2. Electrical connector according to claim 1 and wherein the terminal engaging portion is a normally flat piece of sheet metal having dimple deformations in those portions of its flat surfaces lying between said clips and the ends of said contact.

No references cited.