June 2, 1959 A. E. AUNE 2,889,394

SHIELDED AND COAXIAL CABLE CONNECTION

Filed Oct. 6, 1954

Fig. 1.

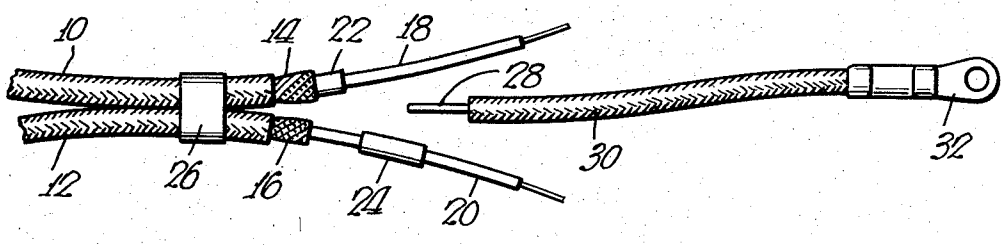


Fig. 2.

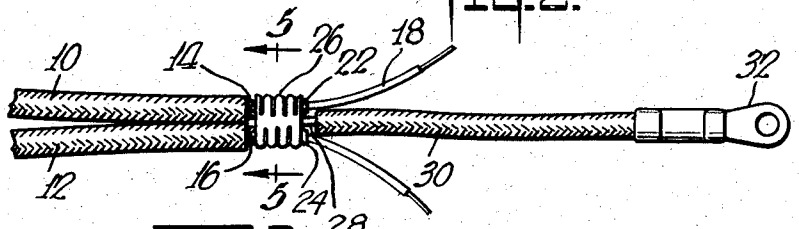


Fig. 3.

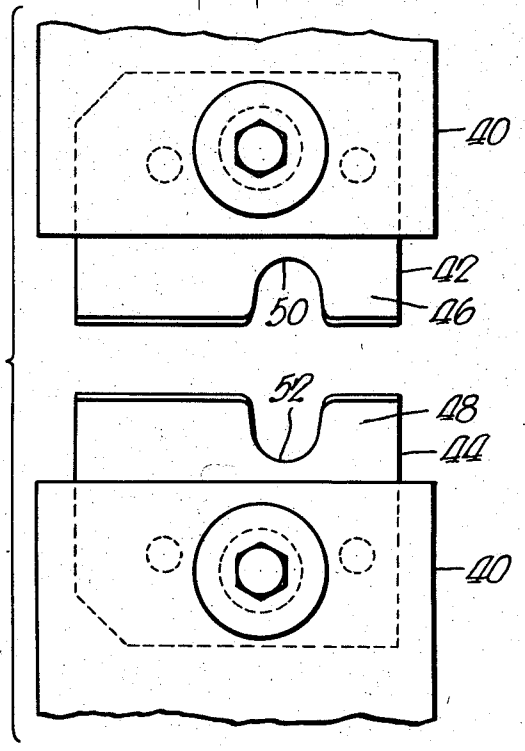


Fig. 4.

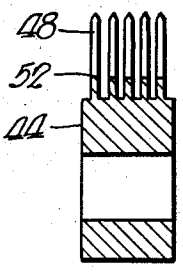
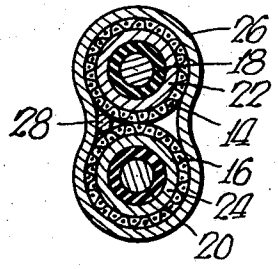


Fig. 5.



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SHIELDED AND COAXIAL CABLE CONNECTION

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2 Claims. (Cl. 174—88)

My invention relates to terminal connections for a pair of coaxial or shielded cables.

The history of coaxial cable connections as exemplified by Patent No. 2,536,003, of which the present effort is part of a continuous development, teaches the use of inner supporting sleeves to prevent distortion of the insulation between the inner conductor and the outer shield. Crimping two adjacent coaxial or shielded cable connections by ordinary crimping tools causes an excessive deformation of the supporting sleeves.

Among the ideas presently in use is the bonding jumper which involves individual installations on each of the shielded cables. This procedure comprises making a pigtail on each single conductor and joining the pigtails together. The final connector has two pigtails on it, one coming from the adjacent conductor, and the other pigtail leading to solid ground. Sometimes space limitations made this practice impractical. Other times, possible variations in the length of ground lead employed in this method may be found objectionable.

Another method is to solder the connections. This method, although it provides a compact bundle, has the disadvantage of damaging the insulation from the heat of soldering. This is a widely used method, although it has the serious drawback of causing frequent insulation failures, with consequent shorting of the assembly.

It is accordingly an object of my invention to provide a simple terminal connection for dual shielded cables which will not distort the insulation between the inner conductor and the outer shields, and to do so without the use of heat or solder.

These and other objects of my invention are accomplished and my new results obtained as will be apparent from the device described in the following specification, particularly pointed out in the claims, and illustrated in the accompanying drawing, in which:

Fig. 1 is an exploded view of the parts forming my new side-by-side coaxial cable terminal connection.

Fig. 2 is a front elevation of the final connection.

Fig. 3 is a front elevation of the dies attached to a crimping tool, partly shown, which dies are used for making the connection.

Fig. 4 is a side elevation of one of the dies.

Fig. 5 is a cross-sectional view of the crimped connection.

In my construction, as shown in the drawing, Fig. 1, a pair of coaxial cables **10** and **12**, are stripped of the shielding metal braid **14** and **16** for a suitable distance, allowing the insulated conductors **18** and **20** to project therefrom. Sleeves **22** and **24** are inserted over the ends of the respective insulated conductors until they are positioned underneath the metal braid. These sleeves are made of sufficiently hard copper alloy, or other material, to resist deformation and thus protect the insulation.

An ovalized outer ferrule **26** is then slipped over the braided shields and the exposed end **28** of insulated ground lead **30** is placed in position between the shields **14** and **16**. Such ground lead may be indented to a terminal connector **32**. The assembly now is ready for crimping.

The crimping tool **40** used for this purpose is partly shown in Fig. 3. The dies **42** and **44** each comprise a

plurality of leaves, such as **46**, so spaced as to permit opposing leaves **48** to enter therebetween. The crimping surfaces **50** and **52**, when closed, naturally conform to the two coaxial cables in side by side position. A draft angle is incorporated in the sides of the crimping surfaces, so that the sides of the ferrule when crimped cannot bulge outwardly, but in fact are pushed inwardly slightly. An angle found suitable for this purpose is approximately 7°. It is obvious that this angle may be varied and still accomplish my purpose. Thus no outer projections are formed which may damage adjacent connections or increase space requirements.

By this method, the final crimp is made which establishes the terminal connection without damage to the insulated conductor or the braided shields. The supporting sleeves are sufficiently resistant to deformation to sustain the strain of crimping the outer ferrule thereto with each braided shield secured in between. The two braided shields are firmly compressed towards each other at their contacting surfaces to securely grip the ground lead, forming a good electrical and mechanical connection. The final connection as produced with the crimping tool is shown in Fig. 3.

I have thus described my invention, but I desire it understood that it is not confined to the particular forms or uses shown and described, the same being merely illustrative, and that the invention may be carried out in other ways without departing from the spirit of my invention, and, therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which objects of my invention are attained and new results accomplished, as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.

I claim:

1. A shielded cable terminal connection comprising a plurality of cables in side by side contacting position, each cable comprising an insulated conductor, a metal cable covering embracing each cable, a portion of which is exposed, an inner supporting sleeve resistant to deformation positioned between each metal covering and the insulated conductor, a ground terminal having an exposed conductor in contact with at least two metal coverings, and an outer malleable metal ferrule generally conforming to the substantially oval cross-sectional shape of the combined side by side metal cable coverings crimped to said substantially undeformed inner sleeves with the metal coverings therebetween, the intermediate portion of the long sides of said substantially oval shaped ferrule being inwardly directed and the ground terminal conductor tightly positioned therein and mechanically and electrically secured thereto.

2. The connection of claim 1, wherein the sides of the outer metal ferrule are slightly inwardly collapsed in the region between the cables.

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