May 18, 1965 S. R. ATKINS 3,184,706

COAXIAL CABLE CONNECTOR WITH INTERNAL CRIMPING STRUCTURE

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FIG. 1.

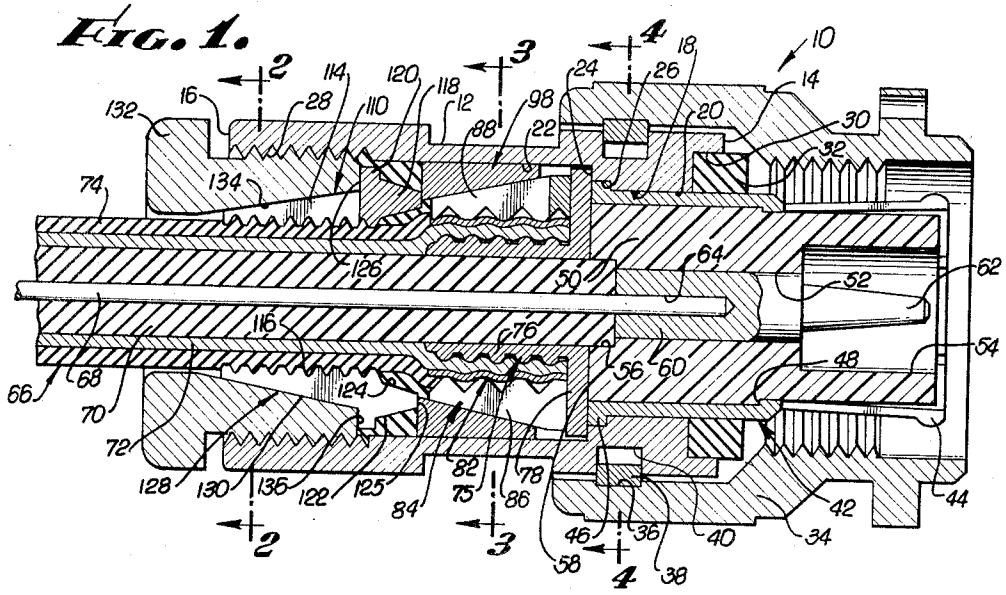


FIG. 2.

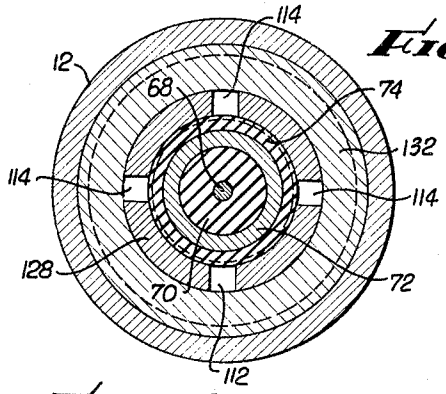


FIG. 3.

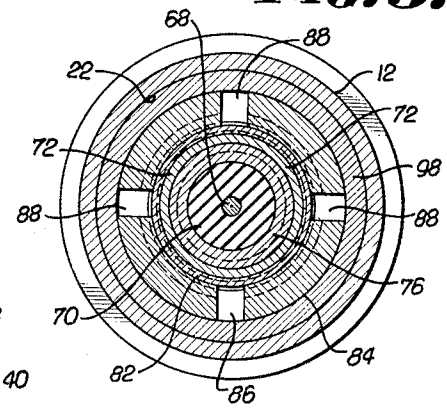
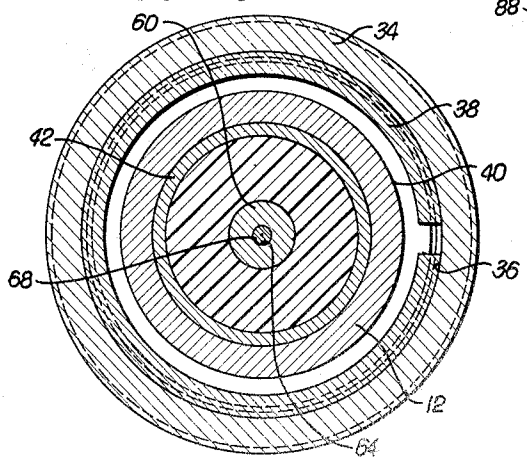


FIG. 4.



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FIG. 5.

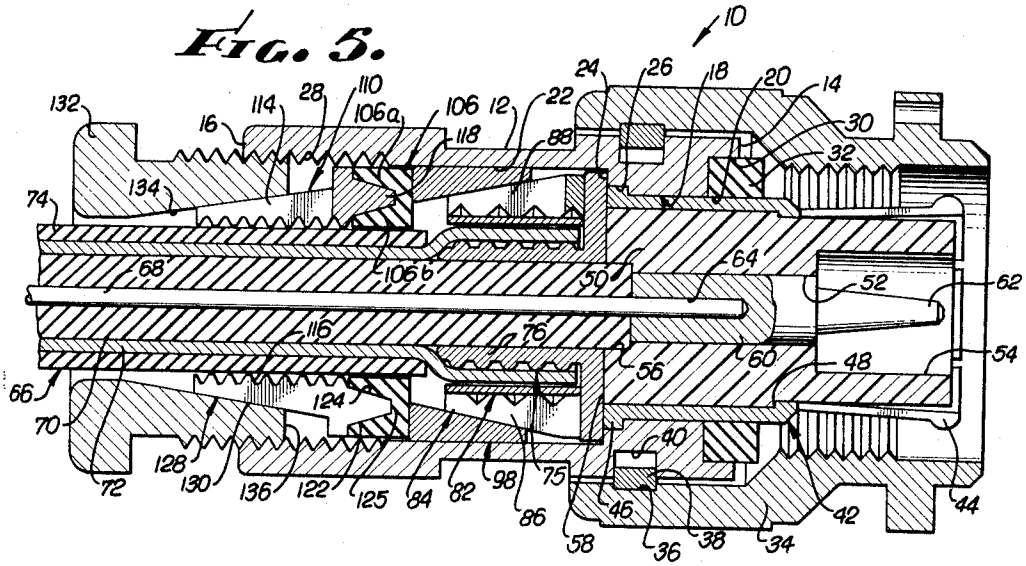
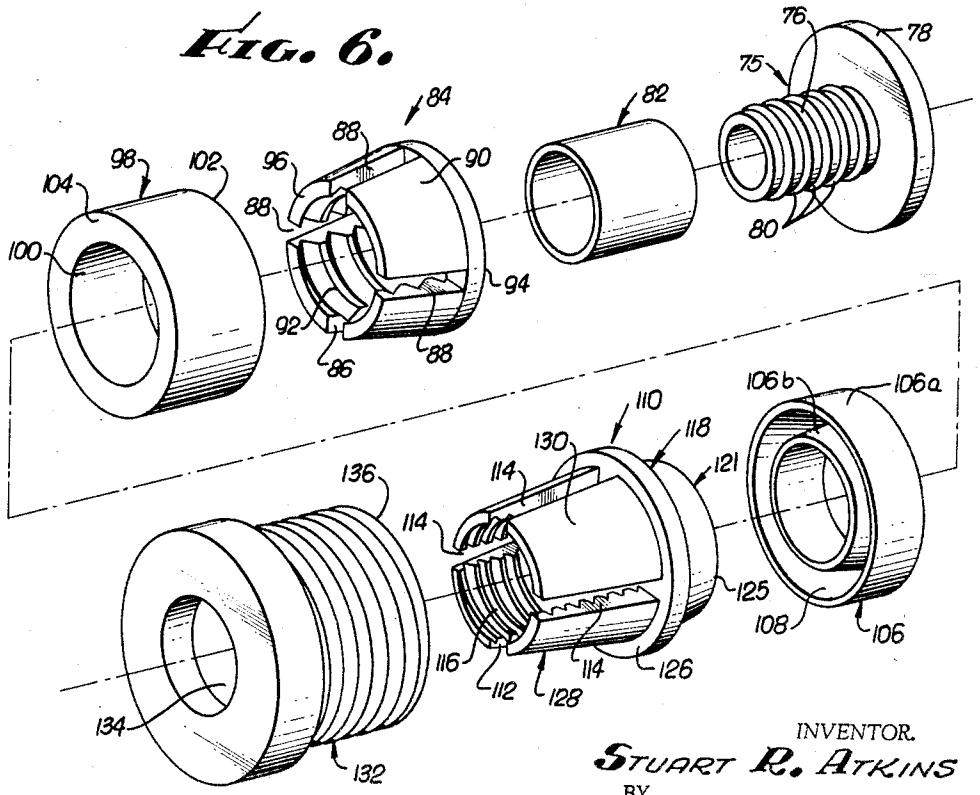


FIG. 6.



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COAXIAL CABLE CONNECTOR WITH INTERNAL CRIMPING STRUCTURE

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The present invention relates to crimped connections between tubular members and to apparatus for performing the crimping operation, and it relates particularly to a crimped connection of the braided tubular outer conductor of a coaxial electrical cable within an electrical connector member, and to structure of the connector member itself which applies the crimp within the connector member after the parts have been assembled.

It is known to join a deformable or flexible tubular member to a generally rigid coupling member, as where the braided tubular outer conductor of a coaxial cable is electrically and mechanically secured in an electrical connector member, by inserting a generally rigid ferrule within an end of the tubular member, with a deformable ring or sleeve circling the tubular member in the region of the inserted ferrule, and then crimping the deformable ring radially inwardly so as to secure the tubular member to the ferrule. In the case of electrical connectors for coaxial cable sections, this means for electrically and mechanically securing the tubular cable braid within the connector replaces solder connections which were previously used, and although application of the crimp is generally simpler and more reliable than performing the prior soldering operation, it nevertheless has previously had certain disadvantages which are overcome by the present invention.

For example, a special crimping tool having crimping jaws of the correct dimensions and configuration has heretofore always been necessary to apply the crimp, and different crimping tools were required for different sizes of coaxial cables and for different types and sizes of connectors. This not only required relatively expensive crimping tools to be kept at hand, but often made it difficult or impossible to apply a crimp in the field where the required tool was not available.

Another problem in connection with the usual crimp type of coaxial cable connector was that the braided tubular outer conductor of the cable was required to be crimped to a ferrule member outside of the connector and before parts of the connector were fitted together.

A further problem in connection with the usual prior art crimp connection of this general type which was applied externally of the connector by a crimping tool was that when the crimping tool was removed after applying the crimp the crimping ring had a tendency to back off slightly from the maximum point of crimp deflection due to resiliency of the material in the crimping ring, whereby the optimum strength and electrical characteristics of the crimp connection were not utilized.

In view of these and other problems relating to prior art crimp type connections of tubular members, and particularly of the braided tubular outer conductor of a coaxial electrical cable to a ferrule portion of an electrical connector member, an object of the present invention is to provide a connector which embodies internal crimping structure that applies the crimp within the connector after the parts are assembled, and without requiring the use of a separate external crimping tool.

Another object of the present invention is to provide a connector of the character described which includes an internal crimping tool that applies the crimp during take-up of the parts after the parts have been completely

assembled, and wherein upon completion of the crimp and during subsequent use of the connector the tool is retained at all times in its final crimping position to hold and maintain the maximum point of crimp deflection, whereby there is no backing off or relaxing of the crimp connection due to resiliency or weakening of the parts of the connection.

A further object of the present invention to to provide a coaxial cable electrical connector having a center contact terminal member which is adapted for connection with the center conductor of a coaxial electrical cable and having tubular outer contact terminal means adapted for electrical connection to the tubular braided outer conductor of the cable, the terminal means for the braided outer conductor including a substantially rigid ferrule or tubular support member which is adapted to be slipped under an exposed end of the cable braid, a crimping ring adapted to be annularly disposed about the cable braid in the region of the ferrule, a crimping ferrule member in the connector member and disposed about the crimping ring, and means forming a part of the connector member for moving the crimping ferrule member radially inwardly so as to crimp the crimping ring against the cable braid and ferrule to securely mechanically and electrically connect the braid to the tubular support member.

An additional object of the invention is to provide a coaxial cable electrical connector of the character described wherein the braided tubular outer conductor of a coaxial cable is secured electrically and mechanically within the connector by internal crimping structure forming a part of the connector, and wherein means is provided for actuating the crimping structure and for simultaneously clamping the outer jacket of the coaxial cable within the connector member.

Further objects and advantages of this invention will appear in the following part of this specification wherein the details of construction and the mode of operation of a preferred embodiment are described with reference to the accompanying drawings, in which:

FIG. 1 is a central longitudinal section through an electrical connector member embodying the present invention, with the parts shown in their fully assembled relationships and after the crimping operation has been performed.

FIG. 2 is a cross-sectional view taken on the line 2—2 of FIG. 1.

FIG. 3 is a cross-sectional view taken on the line 3—3 of FIG. 1.

FIG. 4 is a cross-sectional view taken on the line 4—4 of FIG. 1.

FIG. 5 is a central longitudinal section similar to FIG. 1, but with the parts of the connector member loosely assembled, before the crimping operation has begun.

FIG. 6 is an exploded perspective view showing the various internal parts of the connector member which are employed in the crimping of the braided tubular outer conductor of a coaxial cable and in clamping of the cable jacket.

Reference will first be made to FIGS. 5 and 6, FIG. 5 showing a connector member 10 with the parts thereof in assembled relationship relative to a coaxial electrical cable, but before the parts have been tightened and the crimping operation therein has been performed. The connector member 10 shown in FIG. 5 is a plug connector member, although the present invention is equally applicable to a receptacle connector member adapted to be connected with the plug connector member 10, or may be embodied in other types of electrical connector members.

Although the invention is shown and described in detail herein with respect to an electrical connector for coaxial cables, it is to be understood that the crimping structure

forming a part of the invention is equally applicable for applying a crimp connection with any type of deformable or flexible tubular member. For example, the present crimping structure may be employed in a connector or termination for any type of tubular electrical conductor which may be deformed to the extent required for crimping, or may be employed in connection with a tubular conduit for conducting fluid, or in connection with braided reinforcement for such a fluid conducting conduit.

Referring again to FIG. 5, the connector member 10 includes a tubular body or shell 12 having respective front and rear ends 14 and 16. The bore 18 of tubular body 12 includes a constricted forward bore portion 20 and an enlarged rearward bore portion 22, the bore 18 being of stepped configuration where the bore portions 20 and 22 meet so as to define a rearwardly facing shoulder 24 and an annular notch 26. Internal threads 28 are provided in the rearward part of the enlarged rearward bore portion 22. A shallow counterbore 30 is provided at the front end 14 of body 12 for receiving an annular sealing gasket 32, the gasket 32 being adapted to provide a seal between the forward end of body 12 and the forward end of the body of a mating connector member (not shown).

A coupling nut 34 is rotatably mounted about the front portion of body 12 and extends forwardly from the front end 14 of body 12 for connecting the member 10 with a mating connector member. Coupling nut 34 is rotatably retained on body 12 by provision of an internal annular groove 36 in nut 34 which receives a retainer ring 38, the ring 38 extending radially inwardly into an annular groove 40 in the outer surface of body 12.

A tubular outer contact 42 is mounted in the constricted forward bore portion 20 of body 12, extending forwardly through gasket 32 and having a forward contacting portion comprising a plurality of spring contacting fingers 44. The tubular outer contact 42 is insertable into body 12 from the rear, and has an external annular flange 46 at its rear end which seats within the annular notch 26 at the rear end of the constricted forward bore portion 20. The rear end of outer contact 42 is approximately axially aligned with the rearwardly facing shoulder 24 in bore 18, preferably projecting slightly rearwardly of the shoulder 24 so that it will be in direct physical contact with the flange portion of the ferrule hereinafter to be described.

The tubular outer contact 42 has a forwardly facing annular shoulder 48 therein and serves to limit the forward positioning of an insulator 50 which is insertable within the tubular contact 42 from the rear. Insulator 50 has an axial bore 52 extending therethrough, with a relatively large forward counterbore 54 and a relatively small rearward counterbore 56 therein. The rear end 58 and insulator 50 is approximately axially aligned with the rearwardly facing shoulder 24 of bore 18.

Insulator 50 may be composed of "Teflon" or other suitable dielectric material having sufficient structural rigidity to support a center contact member 60 within the insulator bore 52. Center contact member 60 includes a forward contacting portion 62 that is exposed within the insulator forward counterbore 54 so as to be accessible to a mating contact member from the front of the connector member, and the center contact member 60 has an axial recess 64 therein which opens to the rear of the contact member so as to receive the bared forward end of the center conductor of a coaxial cable.

The coaxial cable 66 which is engaged within the connector member 10 includes a center conductor 68, a dielectric layer 70 surrounding the center conductor 68, a braided tubular outer conductor 72 surrounding the dielectric layer 70, and a cable jacket 74 of insulation material which surrounds the braided outer conductor 72.

The dielectric layer 70 is trimmed back from the end of coaxial cable 66 so as to leave an exposed forward end portion of the center conductor 68 which is inserted into the axial recess 64 of center contact member 60 and secured therein by soldering or crimping.

The structure in the connector member to which the tubular outer conductor 72 of the cable is crimped comprises a ferrule 75 having a tubular support portion 76 which is slidably engaged over the end of the dielectric layer 70 of cable 66 and under the end portion of the braided outer cable conductor 72, the outer conductor 72 expanding in the region of the tubular support portion 76. The ferrule 75 also includes a radially outwardly projecting flange 78 at its forward end, flange 78 seating against the rear end of the tubular outer contact 42 to provide electrical connection between ferrule 75 and outer contact 42. The forward end of the dielectric layer 70 of cable 66 is received within the rearward counterbore 56 of insulator 50.

The tubular support portion 76 of ferrule 75 is preferably provided with a plurality of external annular ribs 80 which serve to enhance both the mechanical and the electrical connection of the tubular outer conductor 72 with the ferrule when the crimp is applied.

A crimping ring 82 composed of deformable metal is disposed annularly about the braided outer cable conductor 72 and is substantially coextensive with the tubular portion 76 of ferrule 75.

Disposed about the crimping ring 82 is a tubular crimping ferrule 84 which is substantially axially coextensive with the crimping ring 82 and the tubular support portion 76 of ferrule 75. Crimping ferrule 84 is generally in the form of a sleeve composed of resilient metal, and has a longitudinal split 86 extending therethrough, with a plurality of rearwardly opening longitudinal slots 88 extending along most of the length of the sleeve, the longitudinal split 86 and slots 88 cooperating to permit constriction of the crimping ferrule 84 so as to provide a crimp to the crimping ring 82 in the manner hereinafter described.

Crimping ferrule 84 has an outer surface 90 which tapers from a relatively large diameter near the front end of crimping ferrule 84 to a relatively small diameter at the rear end of crimping ferrule 84, the outer surface 90 being of substantially frusto-conical form.

The inner crimping surface of crimping ferrule 84 is provided with threads 92 having a relatively large pitch and with flat crowns. It is to be understood, however, that the inner crimping surface of crimping ferrule 84 may be provided with other types of irregularities to provide whatever type of crimp is desired.

The tubular crimping ferrule 84 has a flat front face 94 adapted to seat against the flange portion 78 of ferrule 75, and also has a generally flat rear face 96.

A cam sleeve 98 of continuous annular form is disposed about a portion of the crimping ferrule 84, but has a substantial rearward offset with respect to the crimping ferrule 84 in the loosely assembled positions of the parts as shown in FIG. 5 before the crimp is applied.

Cam sleeve 98 is axially slidable in the enlarged rearward bore portion 22 of tubular body 12, and has a tapered inner surface 100 which is complementary to the tapered outer surface 90 of crimping ferrule 84, the inner surface 100 being of frusto-conical form. The cam sleeve 98 has a front face 102 which, in a loose position of the parts as shown in FIG. 5, is disposed at an intermediate axial position along the tapered outer surface 90 of crimping ferrule 84. The rear face 104 of cam sleeve 98 is preferably flat, and before the crimp is applied to the rear face 104 is disposed substantially to the rear of the rear face 96 of crimping ferrule 84. Forward axial movement of the cam sleeve 98 over crimping ferrule 84 causes sleeve 98 to cam the crimping ferrule 84 radially inwardly so as to apply the crimp to the crimping ring 82.

Immediately to the rear of the cam sleeve 98 is an annular gasket 106 which has a deep rearwardly facing annular groove 108 therein, the groove 108 defining an outer annular gasket portion 106*a* and an inner annular gasket portion 106*b*, the gasket portions 106*a* and 106*b* being

joined at the bottom of groove 108 by a web 106c. The gasket 106 is annularly disposed about the forward end portion of the coaxial cable jacket 74 in the loosely assembled positions of the parts as shown in FIG. 5, with the cable jacket 74 having been trimmed so that its front end is slightly forward of the gasket 106 but rearward of the face 96 of crimping ferrule 84. It will be seen from FIG. 5 that in the loosely assembled positions of the parts the gasket 106 will be offset substantially rearwardly with respect to the rear face 96 of crimping ferrule 84, with the gasket 106 abutting against the rear face 104 of cam sleeve 98.

Immediately to the rear of gasket 106 and disposed about the cable jacket 74 is a cable jacket clamp 110. Jacket clamp 110 is preferably composed of resilient metal, and has a longitudinal split 112 extending the length thereof, and a plurality of rearwardly opening longitudinal slots 114 therein, the split 112 and slots 114 permitting radial constriction of the clamp 110.

The cable jacket clamp 110 includes relatively shallow internal gripping threads 116 preferably having flat crowns, for gripping the cable jacket 74. Clamp 110 is formed with an enlarged head portion 118 having an external flange 120 which extends radially outwardly almost to the wall of the enlarged rearward bore portion 22 of tubular body 12, and the head portion 118 also includes a forwardly projecting annular rib 121 defined between outer and inner tapered surfaces 122 and 124, respectively, which converge toward a front face 125 of annular rib 121. The head portion 118 of clamp 110 presents a rearwardly facing outer shoulder 126.

To the rear of the head portion 118, the cable jacket clamp 110 comprises a rearward wedge portion 128 having a tapered outer surface 130 which tapers rearwardly and radially inwardly in a frusto-conical configuration to the rear end of clamp 110.

The forwardly projecting annular rib 121 of clamp 110 fits into the rearwardly facing annular groove 108 of gasket 106 in the loosely assembled positions of the parts as shown in FIG. 5.

The connector member 10 is completed by an externally threaded tubular nut 132 which is threadedly engageable with the internal threads 28 in the enlarged rearward bore portion 22 of tubular body 12. The tubular nut 132 is engaged over the cable jacket 74, and has a forwardly flaring tapered inner surface 134 which is complementary to the tapered outer surface 130 of the cable jacket clamp 110, and tubular nut 132 has a generally flat front face 136 which is offset substantially rearwardly of the rearwardly facing shoulder 126 on jacket clamp 110 in the loosely assembled positions of the parts as shown in FIG. 5.

The coaxial cable and connector parts are assembled to the positions shown in FIG. 5 by trimming the various layers of the cable 66 to the correct lengths, slidably engaging the tubular nut 132, cable jacket clamp 110, gasket 106, cam sleeve 98, crimping ferrule 84, and crimping ring 82 over the cable; sliding the ferrule 75 over the dielectric layer 70 of the cable with the tubular portion 76 of ferrule 75 engaged under the cable braid 72; and attaching the center contact member 60 to the center cable conductor 68. This assemblage of parts is inserted into the tubular body 12 of the connector member after the tubular outer contact 42 and insulator 50 have been inserted from the rear, and the tubular nut 132 is then threadedly engaged in the rear end of the tubular body 12.

As the nut 132 is screwed into the body 12, it cams the cable jacket clamp 110 radially inwardly, constricting the jacket clamp 110 so that its inner surface defined by gripping threads 116 will grip the cable jacket 74. The depth of penetration of the gripping threads 116 of clamp 110 into the cable jacket 74 is controlled, being limited by engagement of the front face 136 of nut 132 against the rearwardly facing outer shoulder 126 on the clamp 110. During this constricting of the clamp 110 the forward component of force applied by the nut 132 to clamp 110 will start forward movement of gasket 106 and cam sleeve 98, thus starting radial constriction of the crimping ferrule 84.

Continued screwing of the nut 132 after its forward face 136 has come into abutment with the rearwardly facing shoulder 126 on jacket clamp 110 causes the annular rib 121 to cut through the web portion 106c of gasket 106 so as to sever the gasket 106 into two radially spaced annular sections, outer section 106a and inner section 106b, and then the front face 125 of rib 121 comes into direct abutment with the rear face 104 of cam sleeve 98. Continued screwing of the nut 132 into body 12 then causes the cam sleeve 98 to cam the crimping ferrule 84 radially inwardly against the crimping ring 82, radially deforming the crimping ring 82 into the braided tubular outer conductor 72 of the coaxial cable, thus deforming the braid against the restraint of the tubular portion 76 of ferrule 75 so as to accomplish the crimp.

When the crimping action has thus been completed, the forward compression of the parts causes the crimping ferrule 84 to tightly compress the ferrule flange 78 axially against the rearward end of tubular outer contact 42, thus providing an excellent electrical connection between the cable braid 72 and the tubular outer contact 42.

When the cable jacket clamp 110 has seized the cable jacket 74, further forward travel of jacket clamp 110 in the tubular body 12 will draw the cable jacket 74 forwardly over the braid so that the forward end of cable jacket 74 will tend to ride up over the bulge in the braid proximate the rearward end of the tubular portion 76 of ferrule 75 and into abutment with the rearward face 96 of the crimping ferrule 84. At the same time, the inner section 106b of gasket 106 is compacted forwardly and radially inwardly by the inner tapered surface 124 of the jacket clamp annular rib 121. Accordingly, this combination of the forward end of cable jacket 74 and the inner section 106b of gasket 106 will tend to provide a seal to the inside of the jacket clamp rib 121. In a similar fashion, the outer gasket section 106a is compacted between the outer tapered surface 122 of the jacket clamp rib 121, the wall of bore portion 122 of the body and the rear face 104 of cam sleeve 98. In this manner, the gasket sections 106a and 106b tend to provide a seal between the tubular body 12 of the connector and coaxial cable 66.

It is to be noted that the crimp which is effected between the crimping ring 82, the braided outer conductor 72 of the cable and the tubular portion 76 of ferrule 75 is applied with a considerable amount of mechanical advantage, there being an accumulation of mechanical advantages between the threaded forward movement of tubular nut 132 and the camming action between cam sleeve 98 and the crimping ferrule 84. Despite the large amount of crimping force which is thus applied, the rigidity of the tubular portion 76 of ferrule 75 prevents deformation of the cable dielectric layer 70 and therefore prevents distortion of the electrical characteristics of the cable. Similarly, the controlled penetration of the internal gripping threads 116 of jacket clamp 110 into the cable jacket 74 prevents deformation of the cable dielectric.

Not only does the present internal crimping structure of the connector completely eliminate the necessity of a separate crimping tool for crimping the outer conductor of the cable, but its cam wedge type of crimping action is considerably more tolerant of dimensional variations than is the case for an external crimping tool.

With the use of the conventional external crimping tool, once the crimp has been applied the tool is removed from the crimped area. This permits some relaxation of the crimped connection due to backing off of the crimp ring from the maximum point of crimp. However, with the present invention, the crimping ferrule 84 is at all times held in its position of maximum constriction, thus

holding the crimp at the maximum point of inward radial deflection. Even if the connector is later disassembled and again reassembled, upon reassembly the crimp is again applied and held at the maximum point of deflection. It may thus be said that the present invention embodies a built-in crimping tool that stays with the crimp after the crimp has been applied and during operation of the connector member.

While the instant invention has been shown and described herein in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of the invention, which is therefore not to be limited to the details disclosed herein, but is to be accorded the full scope of the claims.

What I claim is:

1. An electrical connector member for attachment to an end of a coaxial cable having a center conductor, a dielectric layer surrounding the center conductor and a flexible tubular outer conductor surrounding the dielectric layer, said connector member comprising a tubular body having front and rear ends, said end of the cable being receivable within the tubular body from the rear, a support ferrule within the body and engageable over the dielectric layer of the cable and inside of the end of the outer conductor of the cable, a crimping ring within the body comprising a sleeve of deformable metal having a larger diameter than said support ferrule, said crimping ring being engageable in surrounding relationship about the support ferrule with the end portion of the outer cable conductor positioned between the crimping ring and support ferrule, a radially contractible crimping ferrule disposed outside of said crimping ring and inside of said body, stop means in the body limiting forward movement of the crimping ferrule with respect to the body, axially movable cam means in the body engaged with said crimping ferrule, forward axial movement of said cam means camming the crimping ferrule radially inwardly to crimp the crimping ring radially inwardly to compress the outer cable conductor against the support ferrule, and means connected to the body for moving said cam means forwardly in the body.

2. An electrical connector member as defined in claim 1 wherein said cam means comprises a cam sleeve having an inside surface inclined forwardly and radially outwardly with respect to the axis of the body, the crimping ferrule having an outside surface inclined in the same general direction as said inside surface of the cam sleeve, the cam sleeve being engaged over the crimping ferrule with said surfaces in overlapping, generally complementary relationship.

3. An electrical connector member as defined in claim 2 wherein said means for moving the cam means comprises a tubular nut threadedly engaged with the body in encircling relationship about the coaxial cable so that rotation of said unit causes it to move axially with respect to the body.

4. An electrical connector member as defined in claim 3 wherein said stop means in the body limiting forward movement of the crimping ferrule comprises a radially outwardly projecting flange on the forward end of the support ferrule against which the crimping tool abuts, and rearwardly facing abutment means in the housing against which the support ferrule flange seats.

5. An electrical connector member as defined in claim 4 wherein said abutment means is defined by a rearward portion of a tubular outer contact mounted in the body and extending forwardly from the support ferrule flange and having a forward contacting portion accessible from the front end of the body.

6. An electrical connector member as defined in claim 5 which includes an insulator mounted in the body and having a bore extending axially therethrough, and a center contact mounted in said insulator bore, the center contact having a rearward terminal portion adapted for attachment to a bared forward end of the center conductor of the cable and having a forward contacting portion accessible from the front end of the body in coaxial relationship with said forward contacting portion of the tubular outer contact.

7. An electrical connector member for attachment to an end of a coaxial cable having a center conductor, a dielectric layer surrounding the center conductor, a flexible tubular outer conductor surrounding the dielectric layer and an outer jacket of insulation material, said connector member comprising a tubular body having front and rear ends, said end of the cable being receivable within the tubular body from the rear, a support ferrule within the body and engageable over the dielectric layer of the cable and inside of the end of the outer conductor of the cable, a crimping ring within the body comprising a sleeve of deformable metal having a larger diameter than said support ferrule, said crimping ring being engageable in surrounding relationship about the support ferrule with the end portion of the outer cable conductor positioned between the crimping ring and support ferrule, the forward end of the cable jacket being rearward of the crimping ring, a radially contractible crimping ferrule disposed outside of said crimping ring and inside of said body, stop means in the body limiting forward movement of the crimping ferrule with respect to the body, first axially movable cam means in the body engaged with said crimping ferrule, forward axial movement of said first cam means camming the crimping ferrule radially inwardly to crimp the crimping ring radially inwardly to compress the outer cable conductor against the support ferrule, a radially contractible cable jacket clamp in the body to the rear of said first cam means and outside of the end portion of the cable jacket, second axially movable cam means in the body engaged with said cable jacket clamp, forward axial movement of said second cam means camming the cable jacket clamp radially inwardly to clamp the cable jacket in the body, and means connected to the body for moving said first and second cam means forwardly in the body.

8. An electrical connector member as defined in claim 7 wherein said means for moving said first and second cam means forwardly in the body comprises a tubular nut threadedly engaged with the body in encircling relationship about the coaxial cable so that rotation of said nut causes it to move axially with respect to the body.

9. An electrical connector member as defined in claim 8 wherein said second cam means comprises a first pair of complementary inclined surfaces on the inside of said tubular nut and on the outside of said cable jacket clamp, said inclined surfaces being in overlapping relationship so that forward axial movement of the nut with respect to the body will cause the cable jacket clamp to be constricted radially inwardly and also to be moved axially forwardy in the body.

10. An electrical connector member as defined in claim 9 wherein said first cam means comprises a cam sleeve and a second pair of complementary inclined surfaces on the inside of the cam sleeve and on the outside of said crimping ferrule, the cam sleeve being engaged over the crimping ferrule with said second pair of inclined surfaces in overlapping relationship so that forward movement of the cam sleeve will cause the crimping ferrule to be constricted radially inwardly.

11. An electrical connector member as defined in claim 10 wherein the forward end of said cable jacket clamp has structure associated therewith which abuts against said cam sleeve so that forward movement of the cable jacket clamp causes forward movement of the cam sleeve.

12. An electrical connector member as defined in claim 11 wherein said structure associated with the cable jacket clamp comprises a head portion of the cable jacket clamp which abuts directly against the cam sleeve.

13. An electrical connector member as defined in

claim 11 wherein said structure associated with the cable jacket clamp includes an annular gasket positioned between the cable jacket clamp and the cam sleeve.

14. An electrical connector member as defined in claim 13 wherein said annular gasket has a rearwardly facing annular groove therein generally dividing the gasket into inner and outer annular sections that are joined by a web at the bottom of the groove, and the cable jacket clamp has an annular rib at its forward end which seats in said rib, forward movement of the cable jacket clamp in the body causing said rib to cut through said web and thereby separate said inner and outer annular sections, the rib then directly engaging said cam sleeve, and said annular gasket sections being under compression.

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