Nov. 24, 1964 R. BOWEN 3,158,424

CONTACT MOUNTING

Original Filed July 25, 1961 3 Sheets-Sheet 1

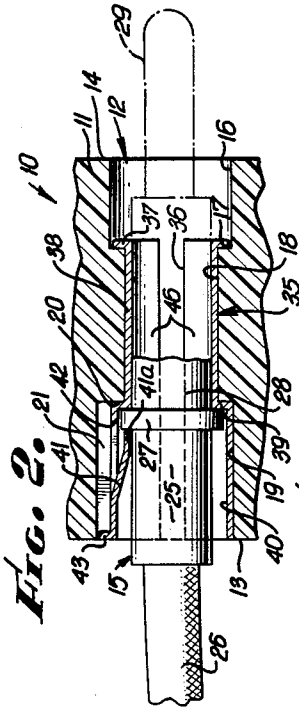

FIG. 2.

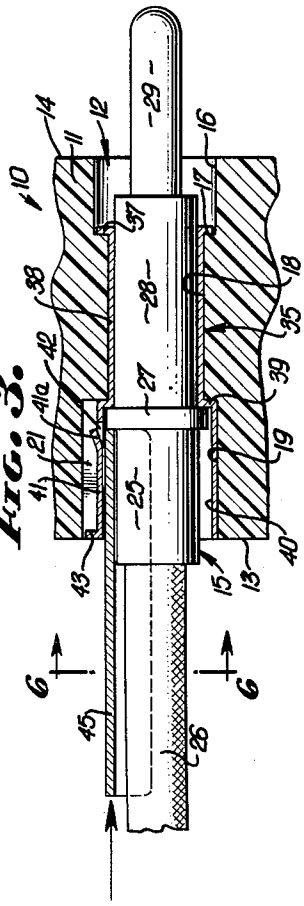

FIG. 3.

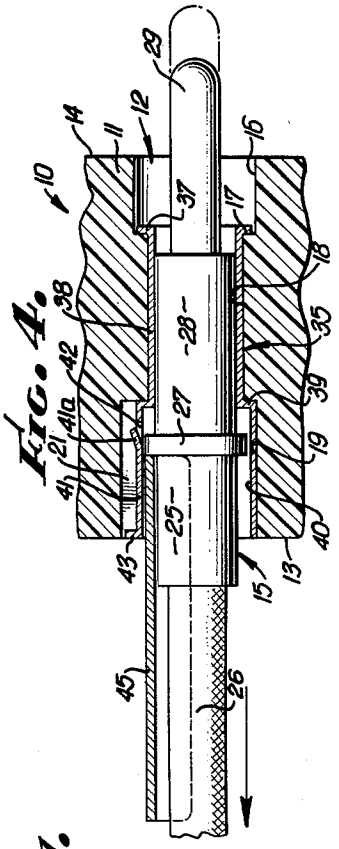

FIG. 4.

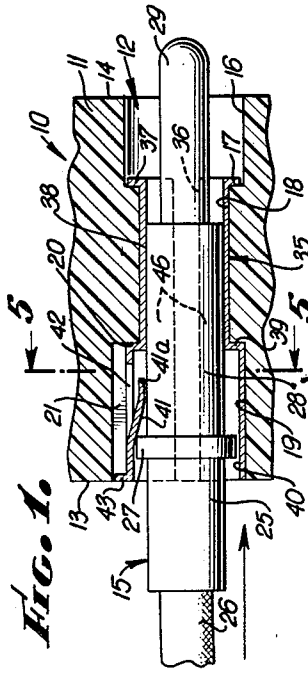

FIG. 1.

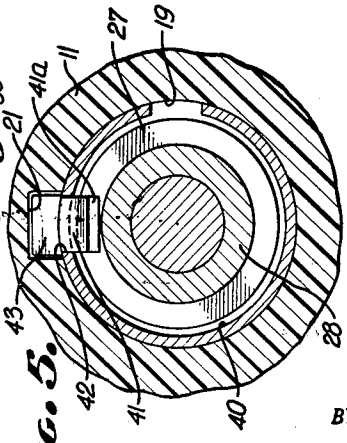

FIG. 5.

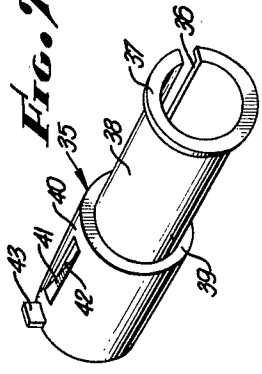

FIG. 7.

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Nov. 24, 1964 R. BOWEN 3,158,424

CONTACT MOUNTING

Original Filed July 25, 1961 3 Sheets-Sheet 2

FIG. 6.

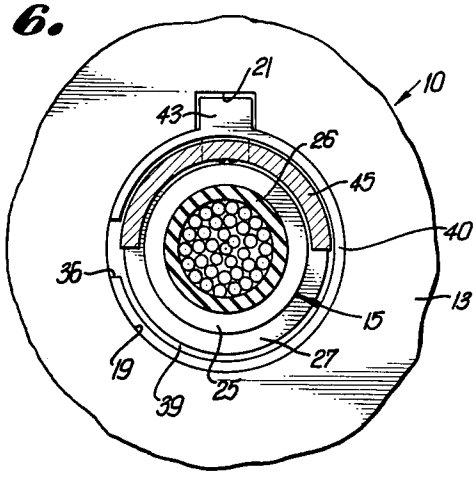


FIG. 8.

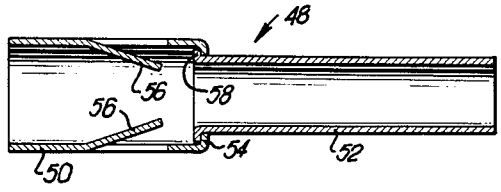
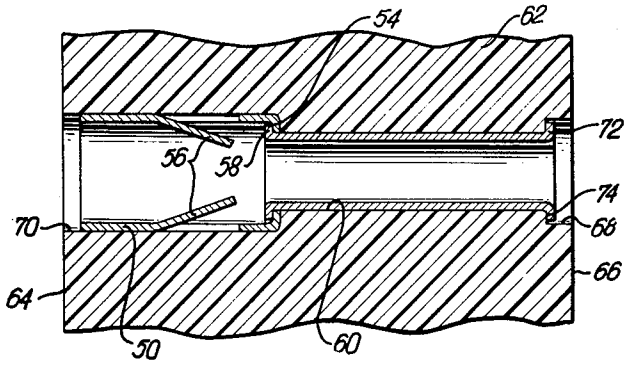


FIG. 9.



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Nov. 24, 1964 R. BOWEN 3,158,424

CONTACT MOUNTING

Original Filed July 25, 1961 3 Sheets-Sheet 3

FIG. 10.

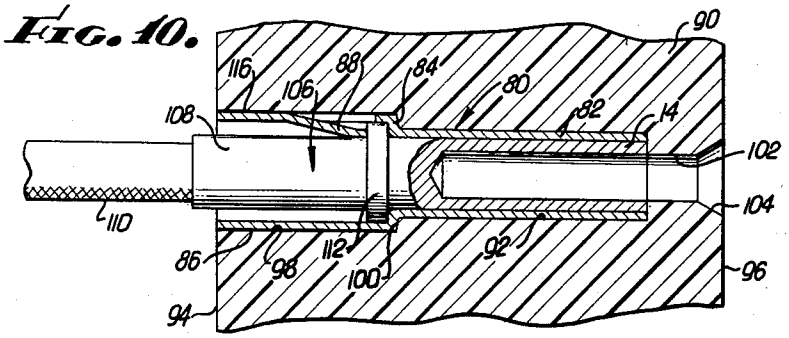


FIG. 11.

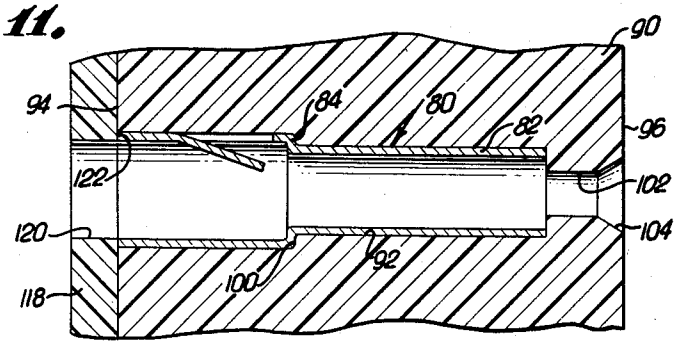


FIG. 13.

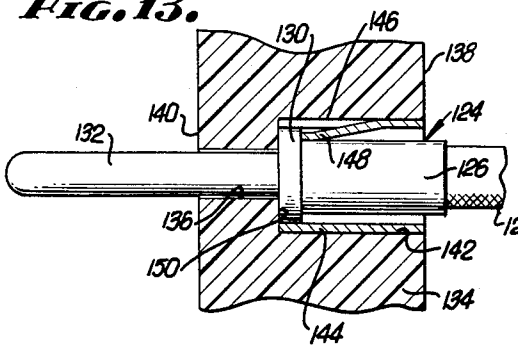
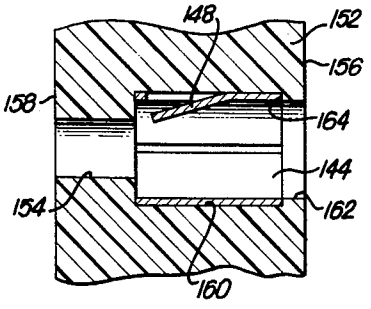


FIG. 14.



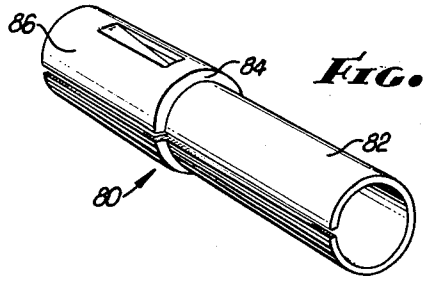


FIG. 12.

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3,158,424

CONTACT MOUNTING

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Continuation of application Ser. No. 127,091, July 25, 1961. This application Feb. 13, 1964, Ser. No. 344,599

11 Claims. (Cl. 339—217)

This application is a continuation of my co-pending application, Serial No. 127,091, filed July 25, 1961, for "Contact Mounting," now abandoned, which was a continuation-in-part of my application, Serial No. 78,457, filed December 27, 1960, for "Contact Mounting," now abandoned.

This invention relates to electrical connectors wherein one or a multiplicity of contact terminals are mounted in one insulation body or block and a complementary contact terminal or terminals are mounted in another insulation body or block. Normally one set of the contact terminals would be pins and the complementary set would be sockets, but they can be other types of mating terminals. The present invention relates to the mounting of either pins or sockets or of any other type of terminal provided it embodies the essential mounting configuration hereinafter described.

Structural connector designs are known wherein the terminal may be pushed through a bore in the insulation block from the rear side thereof so that the terminal contact end protrudes from the forward side thereof in position for effecting physical and electrical engagement with a mating terminal. In such connectors the bore of the insulator into which the terminal is inserted may embody such features that when the terminal is fully advanced it will become locked in place against axial movement in either direction. However, in order to remove the terminals for replacement or repair or reconstituting the pattern in a multiplicity of terminals it is necessary for the operator to have access to the forward face or side of the insulation block in order to apply force or impact by a suitable tool to dislodge the connector in a rearward axial direction so that it may be removed. Upon occasion this presents substantial inconvenience and difficulty. Tool release of such terminals from the front of the insulator requires substantial clearance between the contacts and the forward portion of the insulator for tool entry, which is likely to result in misalignment of the contacts. Where a contact is fully recessed within its insulator, which is usually the case for socket contacts, such front release clearance about the contact makes it impossible to provide an effective lead-in opening or chamfer in the front face of the insulator for guiding an opposed contact, usually a pin, to insure proper alignment of the contacts.

The primary object of the present invention is to provide a contact mounting for an electrical connector in which the contact member may be inserted in the bore of an insulation block from the rear face thereof, caused to be locked in the bore against axial movement in either direction, and which is removable by manipulation entirely rearwardly of the insulation block, access to the front of the block or the front of the contact terminal being wholly unnecessary. By this means, tool entry clearance in the forward portion of the insulator is not required, and it is possible to provide minimum clearance around the contacts at the front of the insulator, thus assuring good stability and alignment of the contacts.

A more particular object of the invention is to provide a contact mounting for an electrical connector wherein a resilient yielding locking element gives way for the insertion of a contact terminal from the rear forwardly through the bore of the insulation block, and when the contact terminal has reached its final operating position the locking member automatically springs into a locking position preventing retraction of the contact terminal; and wherein clearance is provided between the contact terminal and the locking element for insertion of a suitable tool to depress the locking element into a non-locking position whereupon the contact terminal may be withdrawn rearwardly along with the tool.

A more specific object of the invention is to provide in a contact mounting of the general character described a split sleeve of spring characteristics which can be contracted to install it in the bore of an insulator block, the sleeve expanding into permanent engagement with the internal walls of the bore and being thus lodged in place against axial displacement, the sleeve embodying a spring locking element which is cammed out of the way for passage of the contact terminal into its forwardmost position and which springs into a locking position behind an element of the terminal to lock the terminal against axial movement in a rearward direction. In this connection the invention contemplates that a suitable tool such as a blade or semicircular sleeve may be inserted to depress the resilient locking member away from its locking position with the contact terminal and thus enable the contact terminal to be manually withdrawn from the rear of the insulation block without access to or engagement of any part of the forward end of the terminal or face of the insulation block.

A further object of the present invention is to provide a contact mounting for an electrical connector wherein a contact terminal is inserted into a bore of the insulator block from the rear and is releasably locked in the bore by a resilient yielding locking element which can be moved aside to release the contact terminal by insertion of a suitable tool into the bore from the rear, and wherein the forward portion of the contact terminal is recessed within the insulator body and the bore is constricted forward of the terminal and chamfered in the front face of the insulator to provide a lead-in for guiding an opposed contact terminal into mating engagement with the recessed contact terminal.

These and other objects and advantages of the invention will become more apparent from a consideration of the description which follows taken in conjunction with the drawings.

In the drawings:

FIGURE 1 is a vertical longitudinal section of one unit of a connector, the parts being shown with the contact terminal partly installed.

FIGURE 2 is a similar view of the same structure with the terminal locked in position in the bore of the insulation block.

FIGURE 3 is a view similar to FIGURE 2 showing a tool inserted in preparation for removal of the terminal.

FIGURE 4 is a view similar to FIGURES 2 and 3 in which rearward axial movement of the contact terminal for removal of the same from the bore is in progress.

FIGURE 5 is a section taken on the line 5—5 of FIGURE 1.

FIGURE 6 is a section taken on the line 6—6 of FIGURE 3.

FIGURE 7 is a perspective view of a sleeve insert representing a material element of the invention in the form illustrated in FIGURES 1–6.

FIGURE 8 is a longitudinal section illustrating an alternative sleeve insert formed in two parts, prior to the installation of the sleeve insert in the insulation body.

FIGURE 9 is a vertical longitudinal section showing the sleeve insert of FIGURE 8 operatively positioned in the insulation body.

FIGURE 10 is a vertical longitudinal section showing another form of sleeve insert which is bonded in place in the insulator bore and which has a socket contact terminal engaged therein, the insulator bore being constricted and chamfered forwardly of the contact terminal to provide a lead-in for guiding an opposed contact.

FIGURE 11 is a view similar to FIGURE 10 with the contact terminal removed, illustrating the use of a rear insulator member for holding the sleeve insert in place in the main insulator body.

FIGURE 12 is a perspective view illustrating the sleeve insert of FIGURES 10 and 11.

FIGURE 13 is a vertical longitudinal section showing a short sleeve insert bonded in place in the insulator bore, with a pin contact terminal locked in place in the bore, and particularly illustrating the manner in which the front portion of the insulator is constricted about the pin to provide good contact stability.

FIGURE 14 is a view similar to FIGURE 13 with the contact terminal removed, showing another means for securing the sleeve insert in place in the insulator bore.

In the form of the invention selected for illustration in FIGURES 1–7 a connector unit **10** comprises an insulation body **11** having a bore **12** therethrough extending from rearward face **13** to forward face **14** and the bore containing and supporting a contact terminal **15**.

The bore **12** is formed with a forward countersink or enlargement **16** at the rear end of which is an annular shoulder **17**; there is an intermediate reduced mounting cylinder **18** terminating in a rearward counterbore **19** which provides a rearwardly facing annular shoulder **20**. The counterbore is further preferably, although not necessarily, formed with a longitudinally extending slot **21**.

The contact terminal **15** embodies a rearward tubular section **25** which may constitute a solder cup or a crimping sleeve depending upon the choice of connection to be made with an electrical conductor **26**, the details of which are not consequential here. It is important, however, that a stop means which may be in the form of a flange or collar **27** is included in the structure. This flange may enclose an annular chamber not shown but obviously definable by it for lodgment of stripped electrical wires. Forward from the flange or collar **27** is a mounting section **28** which is of such size and dimension as to neatly occupy and snugly fit in the cylindrical mounting portion **18** of the insulation block, allowing for interposition of a mounting sleeve to be hereinafter described. Extending forwardly from the mounting section **28** is a pin contact terminal element **29**. The pin type of terminal element is shown by way of example only and not by way of limitation inasmuch as a socket can be substituted for the pin or some other form of hybrid terminal might be substituted which would mate with a hybrid complementary terminal.

In the form of the invention shown for illustration there is employed a mounting sleeve **35** having a longitudinal split **36**, the sleeve being of a springlike material and which is circumferentially contractible so that its diameter can be constricted for inserting the sleeve into the bore **12** and upon release the sleeve will circumferentially expand into firm engagement with the interior surface of the bore **12**. This sleeve **35** includes a forward annular flange **37** which upon installation abuts against the bore shoulder **17**. It further includes a reduced tubular contact terminal mounting section **38** approximately the same length as the mounting portion **18** of the bore and adapted to lodge snugly therein. At the rear end of the section **38** the sleeve is formed with a radially extending shoulder **39** which when installation is completed lodges against the shoulder **20** of the bore. Succeeding this shoulder **39** and extending to the rearward extremity of the sleeve is an enlarged entrance counterbore **40**.

This counterbore portion is provided with one or more locking tongues **41** which can be conveniently struck from the wall material of the section **40** and is of resilient spring characteristics having its normal position of repose

angled inwardly and forwardly as shown in FIGURE 1. This tongue **41** may be pushed upwardly into and even through a slot **42** in the wall of the section **40** from which it was struck, and an end tab **43** is preferably provided which may be lodged at the rearward extremity of the slot **21** in the insulation block and which visibly marks the circumferential spot where a tongue depressor tool must be inserted.

The diameter of the rearward tubular section **25** of the contact member is sufficiently less than the internal diameter of the sleeve section **40** so that a depressor tool **45** may be slipped in. This tool can be a simple spatula of semicircular cross-section struck on a radius harmonizing with the radius of the contact member collar **27**.

If it should be desired to remove the sleeve **35** from the bore of the insulator it can be contracted by a tool of the general character used to contract expanding **C** rings, such tool having prongs which engage in holes or sockets **46** in the wall of sleeve **35**.

The tongue **41** is illustrated as having a forward terminal section **41***a* angularly disposed to the primary oblique plane of the tongue so that in its normal position of repose the terminal end **41***a* is generally parallel to the axis of the bore **19** and its related elements. This provides a head-on locking abutment between the tongue and the collar **27** and also affords a minute camming action should the same be needed between the collar and the end portion **41***a* when withdrawal of the contact terminal is commenced and progresses as shown in FIGURES 3 and 4.

The insulation block or body **11** is shown in monoblock form. This is of no particular consequence as the insulation body may be laminated if desired and obviously will be of such shape and proportion as to respond to the requirements of the particular connector unit to which the invention is applied.

In use, assuming that the conductor **26** has been properly united with the portion **25** of the contact terminal member, this member is pushed axially into and through the sleeve **35** from rear to front (or from left to right as viewed in FIGURE 1). As the annular collar **27** comes in sliding contact with the locking tongue **41** the latter is depressed by the obvious camming action so far as may be necessary for the collar to pass the forward extremity **41***a* of the tongue. As soon as the shoulder **27** clears the tongue the latter springs into the position shown in FIGURE 2 whereupon the collar and consequently the entire terminal member is locked against axial movement in either direction, being held against further forward axial movement by the shoulder **39** of the sleeve and against rearward axial movement by the locking tongue **41**. The mounting section **28** of the terminal enjoys a relatively snug fit in the mounting portion **38** of the sleeve and as this portion is of substantial length relative to the thickness of the insulation body and of the terminal as a whole a firm and satisfactory mounting is achieved.

To withdraw the terminal member, the tool **45** is slipped in between the external surface of the terminal section **25** and the internal surface of the tongue **41** until the tool has come into contact with the collar **27**, such action resulting in a camming of the tongue **41** into the position shown in FIGURE 3 where it is free of and therefore unlocked from the shoulder **27**. Thereupon the tool and electrical conductor may be grasped between the thumb and forefinger or by any suitable gripping tool such as pliers and easily slipped out rearwardly from the sleeve **35**.

With the use of this invention, optionally a relatively soft elastomer type of insulation body may be employed, the necessary firmness and rigidity for mounting and stabilizing the terminal member being provided by the sleeve **35**. This sleeve may be formed of metal, hard rubber-like material or a synthetic resin. While it could be molded into the insulation body when the latter is formed, ordinarily it will be more convenient to insert it afterward.

If the insulation body is of sufficient firmness and hardness to provide a suitable cylindrical bore section to hold and stabilize the mounting section 28 of the terminal member, the forward portion of the sleeve could be eliminated and merely the rearward portion of the modified sleeve be employed, an example of such a modified sleeve being shown in FIGURES 13 and 14 and being hereinafter described in detail.

FIGURES 8 and 9 illustrate an alternative form of insert sleeve 48 which is provided in two parts, a rearward shoulder retaining clip portion 50 and a forward eyelet portion 52. The clip portion 50 is of generally cylindrical form, having an inturned flange 54 at its front end, and having a pair of diametrically opposed spring locking tongues 56 struck inwardly from the cylindrical part of the clip. The eyelet portion 52 of insert sleeve 48 comprises a sleeve or cylinder of smaller diameter than the cylinder of clip portion 50, with an outwardly turned flange 58 at the rear of eyelet portion 52.

The alternative insert sleeve 48 is adapted for mounting within a bore 60 extending through insulation body 62 from the rear face 64 to the front face 66. The bore 60 includes a forward counterbore 68 and a rearward counterbore 70. Insert sleeve 48 is assembled within bore 60 by inserting the clip portion 50 into the rearward counterbore 70. The eyelet portion 52 is engaged through clip portion 50 so that eyelet flange 58 engages against clip flange 54, with the cylindrical part of eyelet 52 extending forwardly through the reduced portion of bore 60 and into forward counterbore 68. The front end of eyelet 52 is spun over outwardly at 72 to lodge against the forwardly facing shoulder 74 formed by the base of forward counterbore 68, whereby both portions of insert sleeve 48 are secured within the bore.

The two spring tongues 56 function in a similar manner to the tongue 41 of the preferred embodiment illustrated in FIGURES 1 to 7, the collar 27 on the contact member camming tongues 56 out of the way as the contact member is pushed into the insert sleeve 48 from the rear. When collar 27 moves forward to a position in front of tongues 56, the tongues will snap inwardly behind collar 27 to lock the contact terminal against rearward movement in the insulator. Forward movement of the terminal is blocked by engagement of the terminal collar 27 against the eyelet flange 58.

It is to be noted that two locking tongues 56 are provided in the insert sleeve embodiment of FIGURES 8 and 9. The number of locking tongues is optional.

The contact terminal is removed from insert sleeve 48 in the same manner as from the preferred sleeve 35, by moving the tongues 56 out of the way of terminal collar 27 by means of a suitable depressor tool, and then extracting the terminal and tool together.

The forms of the invention shown in FIGURES 10 to 14 do not have the outwardly turned flange at the front end of the insert sleeve, which permits the forward end portion of the bore through the insulation body to be constricted. Where the terminal member is a pin terminal, this permits a close-tolerance fit between the front part of the insulator and the pin to provide excellent stability, while in the case of a socket terminal, the front end of the bore may be employed as a lead-in for guiding an opposed pin contact into mating engagement with the socket.

In the form of the invention illustrated in FIGURES 10, 11 and 12, the insert sleeve 80, composed of spring-like material, is longitudinally split and includes a tubular terminal mounting section 82, with a radially extending shoulder 84 formed at the rear end of section 82. Extending rearwardly from this shoulder 84 to the rearward extremity of the sleeve 80 is an enlarged tubular entrance portion 86 having a spring locking tongue 88 struck inwardly from the wall thereof.

The insulation body 90 has a bore 92 extending therethrough from rearward face 94 to forward face 96. The bore 92 is formed with a rearward counterbore 98

which terminates forwardly at a rearwardly facing shoulder 100. At the front of the insulator the bore 92 is provided with a constriction 102 which has a beveled or chamfered opening 104 at the forward face 96 of the insulator.

The bore which is constricted adjacent to the forward face of the insulator as in FIGURES 10 and 11 is particularly useful where a socket contact terminal is supported therein. Accordingly, in FIGURE 10 a socket contact terminal 106 has been illustrated in its operative position within bore 92. The socket contact terminal 106 embodies a tubular rear section 108 within which the end of an electrical conductor 110 is secured. A stop flange or collar 112 forward of tubular section 108 limits the forward positioning of the terminal by abutting against the sleeve shoulder 84, and is locked against rearward movement by the spring tongue 88 in the same manner as the embodiments of the invention shown in FIGURES 1–9. Removal of terminal 106 from the insulator bore is effected by inserting a suitable tool into the bore from the rear so as to deflect tongue 88 radially outwardly beyond flange 112 and withdrawing the terminal rearwardly out of the bore.

The forward contacting portion of terminal 106 comprises a forwardly opening, generally cylindrical socket 114, the forward end of which is positioned adjacent to the bore constriction 102. It will be seen that the constricted, chamfered portion of the insulator bore forward of the socket portion 114 of the terminal provides a lead-in or guide channel which insures proper alignment of a complementary pin contact member which is mated with the socket terminal 106, even though the pin may be somewhat out of line with the socket when it first enters the chamfered opening 104 of the bore.

The longitudinally split insert sleeve 80 is contracted circumferentially for insertion into bore 92, and expands upon release into tight-fitting engagement against the interior surface of the bore. Sleeve 80 may be secured in this position in one of several different ways. Thus, in FIGURE 10, the sleeve is bonded in place by a layer 116 of a suitable bonding material between the tubular entrance portion 86 of the sleeve and the rearward counterbore 98. Such a bonding layer could, if desired, extend forwardly between the bore and the forward socket portion 114 of the terminal.

Alternatively, the insert sleeve 80 could be molded in place in the insulator body, or it may be retained as shown in FIGURE 11 by means of a rear insulator member 118 which is secured against the rearward face 94 of insulator 90 and which has an entrance bore 120 therethrough slightly smaller than counterbore 98 of the main insulator bore 92 so that insulator member 118 will have a forwardly facing shoulder 122 which abuts against the rearward end of sleeve 80 to prevent rearward movement of the sleeve. A further means which could be employed for securing the sleeve 80 within bore 92 is shown in connection with a modified sleeve in FIGURE 14.

In FIGURES 13 and 14 the invention is shown in a form which is particularly useful for supporting a pin contact terminal in the connector insulator. The pin contact terminal 124 in FIGURE 13 includes a tubular rearward portion 126 within which the end of a conductor 128 is secured. Immediately forward of the tubular portion 126 is a flange or collar 130, and projecting forwardly of flange 130 is forward pin portion 132.

The insulation body 134 shown in FIGURE 13 has bore 136 extending therethrough from rearward face 138 to forward face 140, the bore having an enlarged or counterbored portion 142 extending forwardly from the rearward face 138.

An insert sleeve 144 is positioned in the counterbore 142, and is shown in FIGURE 13 as being secured in the counterbore 142 by adhesive layer 146. Spring tongue 148 struck inwardly from the wall of sleeve 144 serves to releasably engage the terminal flange 130 to releasably

secure terminal 124 against rearward movement in the insulator bore, while abutment of flange 130 against a rearwardly facing shoulder 150 in the bore defines the forwardmost position of the terminal in the bore.

It will be apparent that with the construction shown in FIGURE 13 the inside surface of insulation body 134 in bore 136 may be provided in close-fitting relationship about the base of the pin portion 132 of terminal 124 so as to provide excellent stability and alignment of the terminal.

Referring finally to FIGURE 14, the same insert sleeve 144 is employed in the structure of FIGURE 14 as in that of FIGURE 13, but the means for securing this sleeve in the insulator differs in FIGURE 14. In FIGURE 14, the insulation body 152 has a bore 154 extending between its rearward and forward faces 156 and 158, respectively, the bore 154 having an enlarged rearward portion 160 within which sleeve 144 is mounted.

This distinctive feature in FIGURE 14 is the provision of a radially inwardly directed flange or lip 162 in the bore adjacent the rearward face 156 of the insulation body, which presents a forwardly facing shoulder 164 that abuts against the rear end edge of sleeve 144 to secure sleeve 144 within the insulation body. The sleeve 144 is mounted in the insulator by constricting it radially so that it will slide forwardly past the flange 162, and then releasing it so that it will expand against the insulator wall in bore enlargement 160.

The insulation body 152 may be undercut in any desired manner in the enlarged bore portion 160 to provide flange 162, as by molding the insulator with an annular member that is removable or dissolvable or otherwise disposable in this portion of the bore. One way of handling such a removable member where the insulator is made of rubber-like or thermoplastic material is to partially cure the insulator with the member in place, and then to remove the member and complete the cure.

While the instant invention has been shown and described herein 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 so as to embrace any and all equivalent devices.

What I claim as new and desire to secure by Letters Patent is:

1. An electrical connector unit comprising a body having a bore therethrough from a front face to a rear face thereof, an electrical termination structure in said bore, a spring member in said bore having a portion inclined forwardly and inwardly with respect to the axis of said bore retained by the body against axial shifting and embodying stop means blocking said structure against axial movement in a rearward direction, means blocking axial movement of said structure in a forward direction, and a peripherally continuous clearance space between said structure and the wall of the bore open to the rear face of said body for the insertion of a tool from the rear in a forward direction, the inclined portion of said spring member being adapted to be radially deflected outwardly by the tool to free the stop means from blocking relation to said structure to thereby permit withdrawal of said structure rearwardly from the bore.

2. An electrical connector unit comprising a body having a bore therethrough from a front face to a rear face thereof, said bore comprising a smaller diameter portion opening through said front face and a larger diameter portion opening through said rear face, a rearwardly facing generally radial first shoulder at the juncture of said portions, a spring tongue in said larger diameter portion, fixed at one end therein and extending obliquely forwardly and inwardly from its fixed end toward said shoulder and having a free end spaced axially from said shoulder, an electrical termination structure in said bore and having a front portion laterally confined in said bore portion of smaller diameter, said structure having a rearwardly facing second shoulder interposed between said first shoulder and said free end of said spring tongue and engaging the latter whereby said electrical termination structure is restrained against rearward axial removal from said bore, said structure having a rear portion of smaller diameter than the diameter of the larger diameter portion of said bore and spaced therefrom whereby there is provided a peripherally continuous clearance space therebetween open to the rear of said body, said spring tongue being in said clearance space whereby said contact terminal member may be removed rearwardly from said body by inserting a tool forwardly in said clearance space from the rear of said body and in surrounding relation to said structure to slidingly bear against the inward face of said tongue and thereby progressively flex the free end of said spring tongue radially outwardly clear of said second shoulder.

3. An electrical connector unit as defined in claim 2, said structure having an intermediate portion between the front and rear portions, said intermediate portion comprising an annular collar, said collar defining a forwardly facing stop surface and said second shoulder respectively engageable with said first shoulder and said free end of said spring tongue.

4. An electrical connector unit as defined in claim 2 wherein at least said larger diameter portion of said bore is provided with a lining sleeve of resilient material, said spring tongue being an integral part of said sleeve.

5. An electrical connector unit as defined in claim 4 wherein said body is of insulating material and said sleeve is of metal, said sleeve extending throughout at least a major portion of the axial length of said bore portion of larger diameter.

6. An electrical connector unit as defined in claim 5 wherein said sleeve extends from said first shoulder rearwardly to a position adjacent but short of the rear face of said body, said body including an integral, radially inwardly extending flange, at said rear face, said flange abutting the rear end of said sleeve and thereby locking the same in said bore, the inner diameter of said flange being substantially the same as that of said sleeve and the inner surface of said sleeve being axially aligned with the inner edge of said flange.

7. An electrical connector as defined in claim 2 wherein the said front portion of said termination structure comprises a pin extending forwardly and outwardly of the front face of said body.

8. An electrical connector as defined in claim 2 wherein the front portion of said termination structure comprises a socket, the axial length of which is no greater than the axial length of said bore portion of smaller diameter.

9. An electrical connector unit comprising an insulation body having a bore therethrough with a front end and a rear end, said bore having an enlarged rearward portion, a constricted portion forward of said enlarged portion, a rearwardly facing bore shoulder between said bore portions, and a forwardly facing bore shoulder in front of said constricted bore portion, a lining sleeve in said bore, said sleeve including a generally cylindrical rearward sleeve portion of relatively large diameter which lines the enlarged rearward portion of the bore and is engageable at its forward end against said rearwardly facing bore shoulder to limit forward positioning of the sleeve in the bore, and a generally cylindrical forward sleeve portion of relatively small diameter which lines the constricted portion of the bore, the forward sleeve portion having an out-turned flange at its forward end which is engageable against said forwardly facing bore shoulder to limit rearward positioning of the sleeve in a bore, a wall portion of the sleeve presenting rearwardly directed fixed stop means in the sleeve, said rearward sleeve portion including an inwardly directed resilient lock tongue having a forwardly extending free end whose position of

repose is radially offset inwardly of the body of said rearward sleeve portion, a contact terminal member mounted in the sleeve from the rear, said terminal member having a forwardly facing shoulder thereon which is engageable against said fixed stop means in the sleeve to limit forward movement of the terminal member in the bore and having a rearwardly facing shoulder thereon behind which said lock tongue is engageable to limit rearward movement of the terminal member in the bore, and a clearance provided in said rearward sleeve portion between said sleeve portion and the terminal member opening rearwardly of the insulation body and extending from the rear end of the bore forwardly at least as far as said free end of the lock tongue for insertion of a tool to force the free end of the lock tongue radially outwardly to clear said rearwardly facing shoulder on the terminal member enabling the terminal member to be withdrawn from the rear, the terminal member having a generally cylindrical mounting section which is snugly lodgeable in said constricted portion of the sleeve so as to firmly support the terminal member and render the terminal member laterally stable in the bore.

10. An electrical connector unit as defined in claim 9, wherein said lining sleeve comprises a spring sleeve split throughout its length and circumferentially contractible for axial insertion in the bore.

11. An electrical connector unit as defined in claim 9, wherein said rearward and forward sleeve portions are two separate members, the rearward sleeve portion having an in-turned flange at its forward end, and the forward sleeve portion having an out-turned flange at its rearward end which engages behind said in-turned flange to prevent rearward movement of the rearward sleeve portion in the bore.

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