Feb. 13, 1968 M. A. MENICKELLA 3,369,210

ELECTRICAL CONNECTOR

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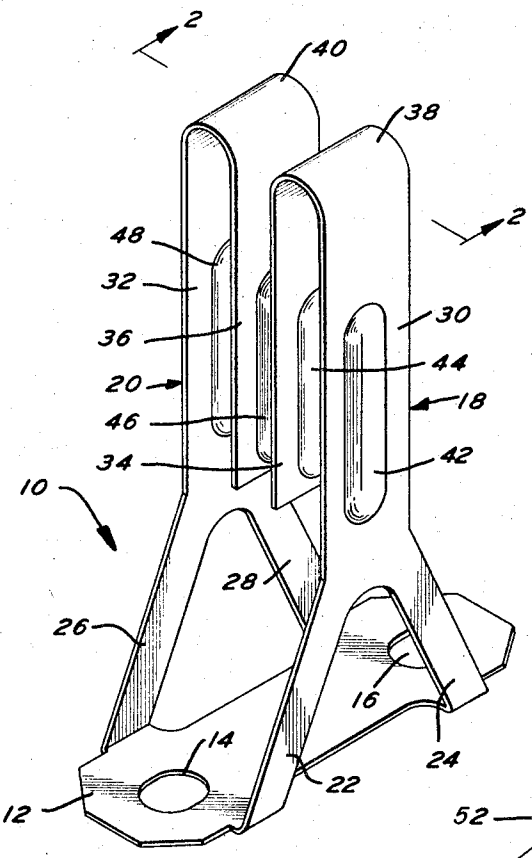


FIG. 1

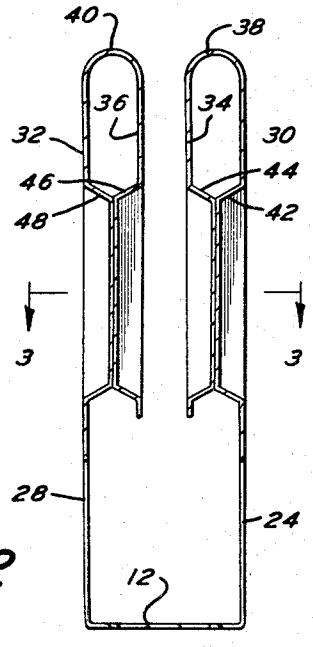
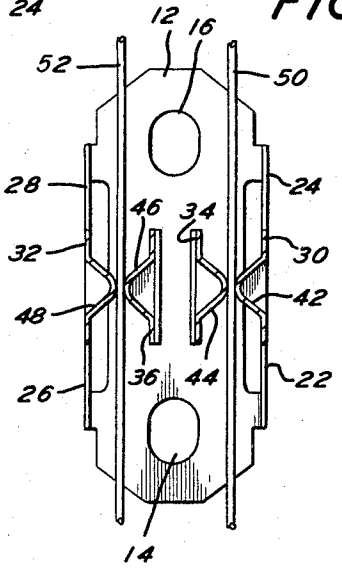


FIG. 2

FIG. 3



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FIG. 4

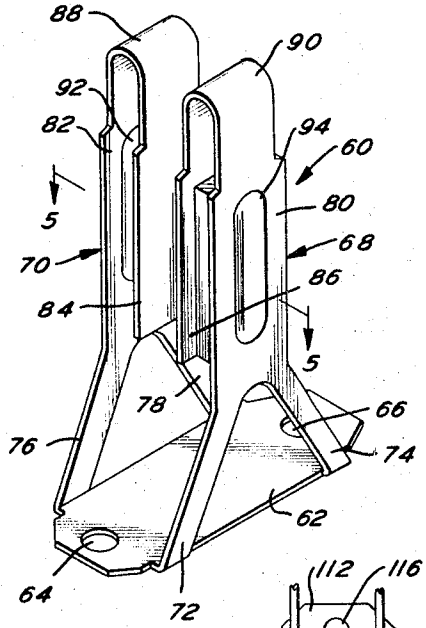


FIG. 5

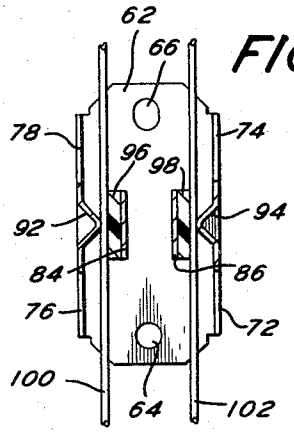


FIG. 6

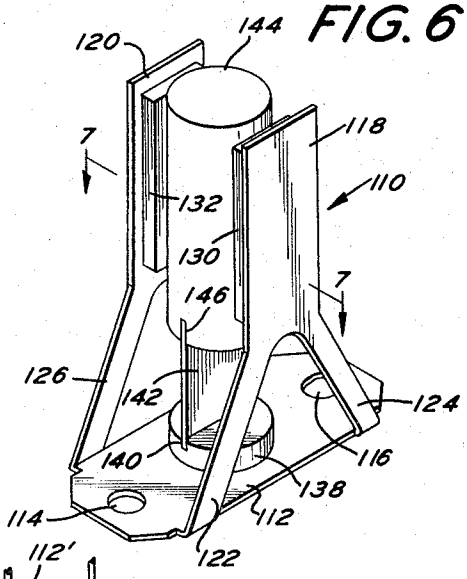


FIG. 7

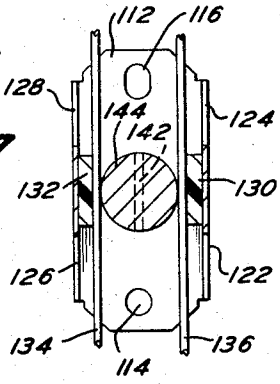
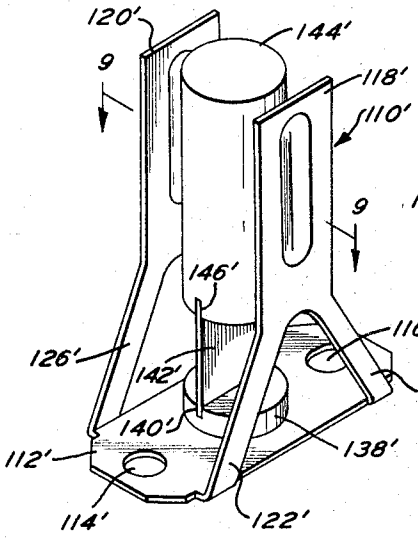


FIG. 8



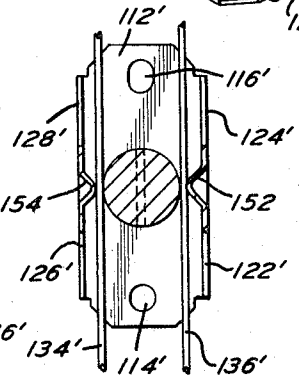


FIG. 9

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ELECTRICAL CONNECTOR

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FIG. 10

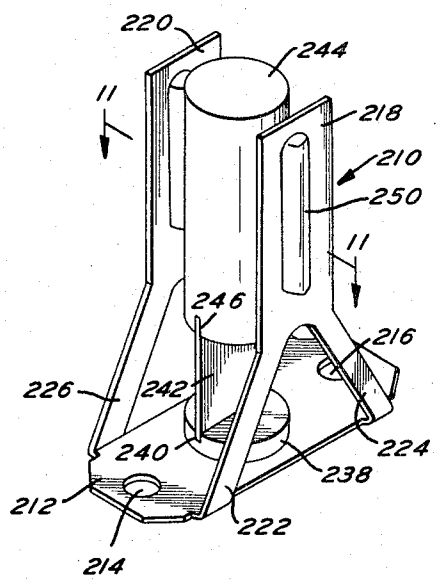


FIG. 11

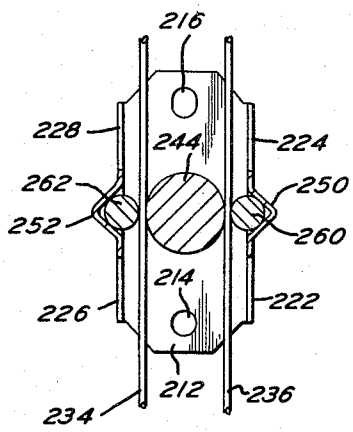


FIG. 12

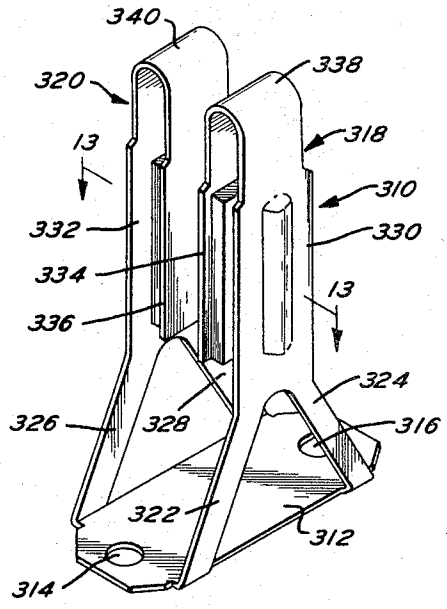
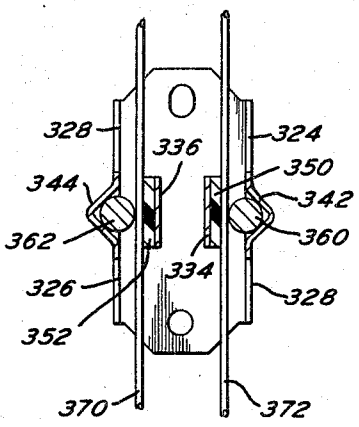


FIG. 13



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United States Patent Office 3,369,210
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3,369,210

ELECTRICAL CONNECTOR

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Filed July 28, 1965, Ser. No. 475,481
17 Claims. (Cl. 339—9)

ABSTRACT OF THE DISCLOSURE

An electrical connector for use with slide wires including a pair of upstanding contact members for supporting an elongated contact to be positioned perpendicular to the slide wire or a backer and also for supporting, if desired, a second elongated contact member parallel to the first mentioned member, or an elongated backer. The contact members may also support only an elongated contact or only a backer, in which instance a central cylindrical contact post is provided. In all cases, a bias forces the elongated contacts towards each other or towards a backer so that a slide wire is engaged therebetween. The electrical connector is used primarily for simultaneously engaging two slide wires.

This invention relates to electrical connectors. More particularly, this invention relates to sliding electrical connectors for use with slide wires.

In electrical measuring instruments and/or servomechanisms, current carrying wires of predetermined linear resistance are often used. These current carrying wires act as a reference source to establish a predetermined quantity upon which the measurement or adjustment is based. The variations or shifts from a predetermined quantity are usually made by measuring changes in resistance, voltage or current in accordance with the movement of a sliding connector along the linear resistance. When voltage is measured, the combination is often referred to as a potentiometer or voltage divider.

In many electrical instruments, particularly measuring instruments, it is essential that the electrical connector be capable of moving very rapidly from position to position along the slide wire while at the same time making continuous contact with the wire.

In using the slide wire, temperature measurements may be made. These temperature measurements must be extremely accurate. Accordingly, when the connector is shifted from position to position it is essential that a slide connector not lose contact with the slide wire and therefore create arcing or an open circuit which would reduce the accuracy of the measuring instrument. Another requirement of such measuring instruments is that the slide wire connector make good electrical contact with the slide wire without impairing the ability of the machine to respond rapidly and accurately to changes in the parameter being measured such as would result if the connector were too tightly attached to the slide wire so as to physically slow down the movement of the motor.

It therefore is a general object of this invention to provide improved electrical connectors.

It is still another object of the present invention to provide improved slide wire connectors.

It is yet another object of the present invention to provide improved slide wire connectors for use in measuring instruments.

It is yet another object of the present invention to provide wire connectors that make continuous contact with the slide wire.

It is a further object of the present invention to provide slide wire connectors that make good electrical contact with the slide wire substantially without effect on

the ability of the slide wire connector to shift rapidly from position to position.

Other objects will appear hereinafter.

For the purpose of illustrating the invention, there is shown in the drawings a form which is presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a perspective view of a slide wire connector.

FIGURE 2 is a vertical sectional view of the slide wire connector shown in FIGURE 1 taken along the line **2—2**.

FIGURE 3 is a sectional view of the slide wire connector illustrated in FIGURE 2 taken along the line **3—3**.

FIGURE 4 is a perspective view of a slide wire connector comprising a second embodiment of the present invention.

FIGURE 5 is a sectional view of the slide wire connector illustrated in FIGURE 4 taken along the line **5—5**.

FIGURE 6 is a perspective view of a slide wire connector comprising a third embodiment of the present invention.

FIGURE 7 is a sectional view of the slide wire connector illustrated in FIGURE 6 taken along the line **7—7**.

FIGURE 8 is a perspective view of a slide wire connector comprising a fourth embodiment of the present invention.

FIGURE 9 is a sectional view of the slide wire connector illustrated in FIGURE 8 taken along the line **9—9**.

FIGURE 10 is a perspective view of a slide wire connector comprising a fifth embodiment of the present invention.

FIGURE 11 is a sectional view of the slide wire connector illustrated in FIGURE 10 taken along the line **11—11**.

FIGURE 12 is a perspective view of a slide wire connector comprising a sixth embodiment of the present invention.

FIGURE 13 is a sectional view of the slide wire connector illustrated in FIGURE 12 taken along the line **13—13**.

Referring now to the drawing in detail, wherein like numerals indicate like elements, there is shown in FIGURE 1 an electrical slide connector designated generally as **10**.

As shown, the slide connector **10** comprises a base **12** in the form of a planar surface having spaced holes **14** and **16** extending therethrough. The holes **14** and **16** are provided so that a fastener may be passed therethrough to attach the slide connector **10** to a supporting mount.

The supporting mount may be directly or indirectly connected to a motor in such a manner as to be moved thereby. Movement of the motor may be in response to some shift in a parameter being measured or detected. Thus, the connector **10** will be moved along a slide wire in accordance with the movement of its supporting arm.

As shown, the base **12** is elongated and supports at either side thereof inverted U-shaped contact members designated generally as **18** and **20**. Contact member **18** is supported by support arms **22** and **24** which are integrally connected to the side of base **12**. Contact member **20** is supported by the support arms **26** and **28** which are integrally connected to the side of base **12** opposite to arms **22** and **24**. Support arms **22** and **24** and support arms **26** and **28** extend outwardly substantially at right angles from the base **12** and at an angle towards each other. Accordingly, the arms **22** and **24** and the arms **26** and **28** respectively form triangular supports for the contact members **18** and **20**.

The contact members **18** and **20** include first contact legs **30** and **32** which are integrally connected to the apices of the triangles formed by arms **22** and **24** and

arms 26 and 28. Contact legs 30 and 32 are each individually connected to second contact legs 34 and 36 respectively. The contact legs 30 and 34 as well as the contact legs 32 and 36 are integrally connected by U-shaped sections 38 and 40 so that contact members 18 and 20 are effectively comprised of a pair of legs and a bight section to form U-shaped contact members.

Contacts 42, 44, 46 and 48 are struck out from each of the contact legs 30, 32, 34 and 36. Contacts 42 and 44 project towards each other and contacts 46 and 48 project towards each other. The contacts 42–48 are elongated and parallel to the longitudinal axis of their respective contact legs. As shown, the apices of the contacts 42–48, which actually make contact with the slide wires 50 and 52 illustrated in FIGURE 3 are rounded. Accordingly, contacts 42–48 make point contact with the slide wires 50 and 52. Moreover, the contacts are elongated in a direction perpendicular to the longitudinal axes of the slide wires. Accordingly, any up and down vibration of slide wires 50 and 52 or up and down movement of the connector 10 will not result in loss of contact.

In accordance with the present invention, the connector 10 is made of an electrically conductive material with resilient or spring-like properties. By way of example, the material may be Paliney No. 7 (heat treated) .004 inch thick. In fabricating the connector 10, the contact legs 30 and 34 as well as the contact legs 32 and 36 are bent to form U-shaped sections 38 and 40 so that contacts 42 and 44 as well as the contacts 46 and 48 are naturally urged into contact with each other by the spring-like properties of the material. When the connector 10 is mounted on a supporting arm or the like, the slide wires 50 and 52 will extend between the pairs of contacts 42, 44 and 46, 48. The spring-like bias of the contact leg 34 toward the contact leg 30 and the bias of contact leg 36 toward contact leg 32 maintains the respective contacts associated with these legs in electrical connection with the slide wires. Should there be any lateral displacement of the contact member 10 or of the slide wires 50 and 52 for whatever reason, at least one of the pairs of contacts will at all times remain in contact with its respective slide wire.

Although the amount of force required for continuous contact between the contacts and their respective slide wires may be varied, by way of example it has been found that a force of 1.23 grams is sufficient to maintain contact while at the same time reducing friction to as small a quantity as possible when the slide wire constitutes an alloy having a resistance of approximately 1,525 ohms per foot. It is expected that the slide wires 50 and 52 will be electrically connected at the ends thereof and therefore effectively constitute a single slide wire. Similarly, since the connector 10 is made of a single piece of electrically conductive material, it constitutes the common electrical contact with the slide wires 50 and 52 which remains constantly in contact therewith even though it is connected at two points. It will be readily recognized by those skilled in the art that the connector 10 need not be made of a single piece of material. Thus, the base 10 could be made from an electrically insulating material which would therefore convert the connector into a dual connection.

Referring now to FIGURES 4 and 5, there is shown a second embodiment of the present invention designated generally as 60.

As shown, a slide connector 60 comprises a base 62 in the form of a planar surface having spaced holes 64 and 66 extending therethrough. The holes provide a means whereby the connector 60 may be attached to a supporting mount.

The supporting mount may be the same type of mount that is set forth above for connector 10. Therefore, further description is not necessary.

As shown, the base 62 is elongated and supports at either side thereof inverted U-shaped contact members

designated generally as 68 and 70. These contact members are substantially the same as the contact members 18 and 20 described for connector 10. Contact member 68 is supported by support arms 72 and 74 which are integrally connected to the side of base 62. Contact member 70 is supported by support arms 76 and 78 which are integrally connected to the side of base 62 opposite to arms 72 and 74. Support arms 72 and 74 and support arms 76 and 78 extend outwardly substantially at right angles from the base 62 and at an angle towards each other. Accordingly, the arms 72 and 74 and the arms 76 and 78 respectively form triangular supports for the contact members 68 and 70.

The contact members 68 and 70 include first contact legs 80 and 82, which are integrally connected to the apices of the triangle formed by the arms 72 and 74 and the arms 76 and 78, respectively. Contact legs 80 and 82 are each connected to second contact legs 84 and 86 respectively. The contact legs 80 and 86 as well as the contact legs 82 and 84 are integrally connected by U-shaped sections 88 and 90, so that contact members 68 and 70 are effectively comprised of a pair of legs and a bight section to form U-shaped contact members.

Contacts 92 and 94 are struck out from each of the contact legs 82 and 80 respectively. Contacts 92 and 94 project toward legs 84 and 86, which support low friction backers 96 and 98. Backers 96 and 98 are preferably cemented to legs 84 and 86 so as to present a surface upon which the slide wires 100 and 102 are to ride. Backers 96 and 98 are designed to be gerater in length than the contacts 92 and 94, as well as being of substantial width. Thus, the contacts 92 and 94 are elongated and parallel to the longitudinal axis of the backers 96 and 98. Contacts 92 and 94 are generally V-shaped in cross-section with their apices being slightly rounded. The backers 96 and 98 may be made of a low-friction material such as Teflon.

As shown in FIGURE 5, the apices of the contacts 92 and 94, make contact with the slide wires 100 and 102. Because the contacts are elongated in the direction perpendicular to the longitudinal axes of the slide wires 100 and 102, any up and down vibration of the slide wires or up and down movement of the connector 60 will not result in loss of contact. The contact members 68 and 70 are designed so that their respective legs 80 and 86 and legs 82 and 84 are spring biased towards each other. Thus, the slide wires 100 and 102 are caused to make physical contact with the contacts 92 and 94 as well as the backers 96 and 98.

The connector 60 is made of an electrically conductive material with resilient or spring-like properties. By way of example, the material may be beryllium copper.

It will be apparent to those skilled in the art that the operation of the slide wire connector 60 is not unlike that of the slide wire 10 and therefore need not be described in further detail.

Referring now to FIGURES 6 and 7, there is shown a slide wire connector comprising a third embodiment of the present invention designated generally as 110.

As shown, the slide connector 110 comprises a base 112 in the form of a planar surface having spaced holes 114 and 116 extending therethrough. The holes 114 and 116 are provided so that a fastener may be passed therethrough to attach the slide connected pin to a supporting mount. The supporting mount may be the same type of mount as described with respect to the slide connector 10.

The base 112 is elongated and supports at either side thereof backer supports designated generally as 118 and 120. Backer support 118 is supported by support arms 122 and 124, which are integrally connected to the side of base 112. Backer support 120 is supported by support arms 126 and 128 which are integrally connected to the side of base 112 opposite to arms 122 and 124. Support arms 122 and 124 and support arms 126 and 128 extend outwardly substantially at right angles from the base

112 and at an angle towards each other. Accordingly, the arms 122 and 124 and the arms 126 and 128 respectively form triangular supports for the backer supports 118 and 120.

The backer supports 118 and 120 are integrally connected to the apices of the triangles formed by the arms 122 and 124 and the arms 126 and 128 respectively. Low friction backers 130 and 132 are cemented to the backer supports 118 and 120 respectively. Backers 130 and 132 may be made of a low friction material such as Teflon and are provided with planar surfaces over which the slide wires 134 and 136 may ride.

Connector base 112 has a leaf spring base 138 attached thereto. The leaf spring base 138 is provided with a slot 140 in its upper surface, which slot has fixed therein a leaf spring 142. The leaf spring 142 supports at its upper end a contact post 144. The contact post is a cylindrical member provided with a slot 146 in one end thereof so as to fixedly receive the upper end of leaf spring 142. As shown, the leaf spring 142 is flat and has a substantial width. As thus constructed, the leaf spring 142 deflects perpendicular to the longitudinal axes of the slide wires 134 and 136 but there is no effective deflection of the leaf spring 142 parallel to the longitudinal axes of the slide wires. The contact post 144 may be made of a conducting material, as for example Paliney No. 7. The construction of the connector 110 is such that the backer supports 118 and 120 are biased towards each other by their respective legs. The connector 110, other than post 144, may be made of beryllium copper. The result is that the slide wires 134 and 136 are held in contact with the post 144.

Referring now to FIGURES 8 and 9, there is shown a slide wire connector comprising a fourth embodiment of the present invention designated generally as 110'. The connector 110' is similar in construction to connector 110 and like elements will be designated with primed numbers.

As shown, the connector 110' includes a base 112', spaced holes 114' and 116', support legs 122' and 124', as well as support legs 126' and 128'. The base 112' has attached thereto a leaf spring base 138' having a slot 140' within which is supported the leaf spring 142'. The upper end of leaf spring 142' is fixed within a slot 146' in the lower end of contact post 144'. As thus far described, the connector 110' is substantially the same and the elements function in the same manner as in the connector 110.

The legs 122' and 124' and the legs 126' and 128' support contactor supports 118' and 120'. Contact supports 118' and 120' are integrally connected at the apices formed by the legs 122' and 124' and legs 126' and 128' respectively. The contact supports 118' and 120' have struck out therefrom elongated contacts 152 and 154. The contacts 152 and 154 are constructed in a manner similar to the contacts 92 and 94 or the contacts 42 and 48. Thus, the contacts are V-shaped in cross-section with rounded apices and make point contact with the slide wires 134' and 136'. If desired, the contact post 144' may be made of Paliney No. 7 and the contacts 152 and 154 made of beryllium copper. In accordance with the principles of this invention, the contacts 152 and 154 are biased towards the post 144'. Due to the cylindrical nature of the post 144' and the elongated contacts 152 and 154, the connector 110' will make continuous contact even though it or slide wires 134' and 136' vibrate with an up and down motion.

Referring now to FIGURES 10 and 11, there is shown a slide wire connector comprising a fifth embodiment of the present invention designated generally as 210.

The slide wire connector 210 comprises a base 212 having spaced holes 214 and 216 therethrough. Contact support arms 222 and 224, as well as contacts support arms 226 and 228 extend perpendicularly outward from the base 212 in the manner of contact support arms previously described.

The contact support arms support contact supports 218 and 220 at their apices.

The base 212 has a leaf spring support base 238 attached thereto intermediate the end of base 212. The leaf spring base 238 includes a slot 240 within which is fixed a leaf spring 242. The upper end of leaf spring 242 is fixed within a slot 246 in the lower end of contact post 244. As thus far described, the construction of slide wire connector 210 is substantially the same as that of connectors 110 and 110'.

The contact supports 218 and 220 have elongated struck out portions 250 and 252. As shown, the struck out portions 250 and 252 extend outwardly rather than towards each other as in previous embodiments of the present invention. The struck out portions 250 and 252 provide elongated recesses within which may be mounted the contacts 260 and 262. Contacts 260 and 262 may be soldered, brazed, or welded within the recesses 250 and 252, and must be conductive if post 244 is not. Contacts 260 and 262 are cylindrical and therefore provide a rounded contact surface for the slide wires 234 and 236. The contacts 260 and 262 together with the contact post 244 may be made of Paliney No. 7. The recesses 250 and 255, as well as the remainder of the connector 210 may be made of beryllium copper.

In operation, the arms 222 and 224, as well as the arms 226 and 228 bias the contacts 260 and 262 into engagement with the post 244. Thus, the slide wires 234 and 236 are held in electrical contact. With this construction, neither up or down vibration or lateral displacement will result in a break in contact between the slide wires and the contacts.

Referring now to FIGURES 12 and 13, there is shown a slide wire connector comprising a sixth embodiment of the present invention designated generally as 310.

As shown, the slide wire connector 310 comprises a base 312 in the form of a planar surface having spaced holes 314 and 316 extending therethrough. The holes 314 and 316 are provided so that a fastener may be passed therethrough to attach the slide wire connector 310 to a supporting mount. The supporting mount may be substantially the same type of mount described with respect to the slide wire connector 10.

The base 312 is elongated and supports at either side thereof inverted U-shaped contact members designated generally as 318 and 320. Contact member 318 is supported by support arm 322 and 324 which are integrally connected to side of base 312. Contact member 320 is supported by the support arms 326 and 328 which are integrally connected to the side of base 312 opposite to arms 322 and 324. Support arms 322 and 324 and support arms 326 and 328 extend outwardly substantially at right angles to the base 312 and at an angle towards each other. Accordingly, the arms 322 and 324 and the arms 326 and 328 respectively form triangular supports for the contact members 318 and 320.

The contact members 318 and 320 include first contact legs 330 and 332, which are integrally connected to the apices of the triangles formed by the arms 322 and 324 and the arms 326 and 328. Contact legs 330 and 332 are individually connected to second contact legs 334 and 336 respectively. The contact legs 330 and 334, as well as the contact legs 332 and 336 are integrally connected by U-shaped sections 338 and 340, so that contact members 318 and 320 are effectively comprised of a pair of legs and a bight section to form U-shaped contact members.

Recesses 342 and 344 are struck out from each of the contact legs 330 and 332. Recesses 342 and 344 project away from each other and are elongated with their longitudinal axes parallel to their respective contact legs. The recesses 342 and 344 support therein cylindrical contacts 360 and 362, which extend beyond the recesses. The contacts 360 and 362 must be conductive, soldered, brazed or welded to the recesses 342 and 344. Contacts 360 and 362 may be made of Paliney No. 7.

Contact legs 334 and 336 each support a backer 350 and 352. The backers 350 and 352 may be made of a low friction material such as Teflon and are cemented to the legs 334 and 336 in position opposite the contacts 360 and 362. The backers 350 and 352 are provided with a planar surface upon which the slide wires 370 and 372 slide.

The connector 310 is made of an electrically conductive material with resilient spring-like properties. By way of example, the material may be beryllium copper. In fabricating the connector 310, the legs 330 and 334, as well as the legs 332 and 336 are bent to form U-shaped sections 338 and 340 so that contacts 360 and 362 are urged into contact with the backers 350 and 352 by the spring-like properties of the beryllium copper. When the connector 310 is mounted on a supporting arm or the like, the slide wires 370 and 372 will extend between the contacts 360 and 362 and their respective backers 350 and 352. The spring-like bias of the contact legs towards each other contains the contacts in electrical connection with the slide wires.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof and, accordingly, reference should be made to the appended claims, rather than to the foregoing specification as indicating the scope of the invention.

I claim:

1. An electrical connector comprising a base, first and second contact members supported on said base, said contact members being spaced apart, each contact member including a pair of contact legs joined together at one end thereof, an elongated contact projecting from one leg toward an elongated contact on the other leg, and means resiliently biasing said contacts of each contact member toward each other.

2. An electrical connector comprising a base, first and second contact members supported on said base, said contact members being spaced apart and oppositely disposed, each contact member including a first contact leg supported by said base and a second contact leg supported by said first contact leg, an elongated contact projecting from each of said legs, the contacts of each contact member projecting toward each other, and means biasing said elongated contacts of each contact member toward each other.

3. An electrical connector in accordance with claim 2 wherein said connector is a unitary member, said contact member being integral with said base, said first and second legs of each contact member being integrally joined, and said elongated contacts being struck out from said legs.

4. An electrical connector comprising a base, first and second contact members extending outwardly from said base, said contact members being spaced apart and oppositely disposed in facing relation, each contact member including a first contact leg joined to said base and a second contact leg joined to said first contact leg at a point remote from said base, an elongated contact having its longitudinal axis parallel to the leg axes projecting from each leg towards the contact on the other leg of each contact member, and means resiliently biasing said contacts of each contact member toward each other.

5. An electrical connector comprising a base, first and second members extending outwardly from said base, said contact members being spaced apart and oppositely disposed in facing relation, each contact member including first and second contact legs joined together at the ends remote from said base to form a U-shaped member, the first legs being joined to said base, an elongated contact struck out from each of said first and second legs, said elongated contacts of each contact member projecting toward each other and being parallel to the longitudinal axes of said legs, and said legs being made of a resilient material adapted to bias said contacts towards each other.

6. An electrical connector in accordance with claim 5 wherein said connector is made from a unitary piece of electrically conductive material.

7. An electrical slide wire connector comprising a base, a plurality of spaced support means extending outwardly from and connected to said base, at least one of said support means supporting an elongated electrical contact positioned for contacting a slide wire with the longitudinal axis of contact at an angle to the longitudinal axis of the slide wire, another of said support means supporting a non-conductive backer means parallel to and spaced from the contact, each said contact and backer member projecting from its respective support means toward each other, each said supporting means including a spring bias means for urging said contact and said backer means towards each other, whereby said slide wire can be contacted therebetween.

8. Apparatus in accordance with claim 7 wherein said backer means includes a low friction backer pad.

9. An electrical connector comprising a base, first and second contact members supported on said base, said contact members being spaced apart and oppositely disposed, each contact member including a first leg supported by said base and a second leg supported by said first leg, an elongated contact projecting from one of said legs, and a backer member supported by the other of said legs of each contact member, said contacts projecting toward their respective backer members; and means for biasing each said elongated contact towards said backer member of the same contact member.

10. An electrical connector in accordance with claim 9 wherein said elongated contacts are supported by said first legs and said backer members are supported by said second legs, and said elongated contacts being struck out from said first legs.

11. An electrical connector in accordance with claim 9 wherein said elongated contacts are cylindrical members, said contacts being supported in recesses formed within said first contact leg, and said backer members are supported by said second leg.

12. Apparatus in accordance with claim 9 wherein said backer member includes a low friction backer pad.

13. An electrical connector comprising a base, at least one contact member supported on said base, said contact member including a pair of contact legs joined to each other at a point remote from the base and remote from their closest approach to the base, an elongated contact projecting from one leg toward an elongated contact on the other leg, and resilient means biasing said contacts of the contact member toward each other.

14. An electrical connector comprising a base, first and second members supported on said base, said members being spaced apart and oppositely disposed, a third member supported from said base intermediate said first and second member, said third member including an elongated conductive contact post supported on a spring bias means, said spring bias means permitting movement of said contact post only in directions toward and away from said first and second members, said first and second members including means for spring biasing them toward said contact post, each of said first and second members supporting a non-conductive backer member extending parallel to the longitudinal axis of said contact post, said backer members being positioned to be biased toward said contact post.

15. An electrical connector comprising a base, first and second members supported on said base, said members being spaced apart and oppositely disposed, a third member supported from said base intermediate said first and second members, said third member including an elongated conductive contact post supported on a spring bias means, said spring bias means permitting movement of said contact post only in directions toward and away from said first and second members, said first and second members including means for spring biasing them toward said contact post, said first and second members including

elongated electrical contacts projecting toward said contact post, the longitudinal axis of said contacts being parallel to the longitudinal axis of said post, said contacts being biased toward said post.

16. An electrical connector comprising a base, first and second members supported on said base, said members being spaced apart and oppositely disposed, a third member supported from said base intermediate said first and second members, said third member including an elongated conductive contact post supported on a spring bias means, said spring bias means permitting movement of said contact post only in directions toward and away from said first and second members, said first and second members including means for spring biasing them toward said contact post, said first and second members including an elongated recess, an elongated contact supported within said recess and projecting toward said contact post parallel to the longitudinal axis thereof, said elongated contact having a cylindrical surface, and said elongated contact being biased toward said post.

17. An electrical connector comprising a base, first and

second contact members supported on said base, said contact members being spaced apart, each contact member including a pair of legs joined together at one end thereof, an elongated contact projecting from one leg toward a non-conductive backer member on the other leg, and means resiliently biasing the contact and backer member of each contact member toward each other.

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