Aug. 10, 1965 J. P. BLANCHENOT 3,200,367

MATING ELECTRICAL PIN AND SOCKET CONTACTS AND INSULATOR THEREFOR

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FIG. 1.

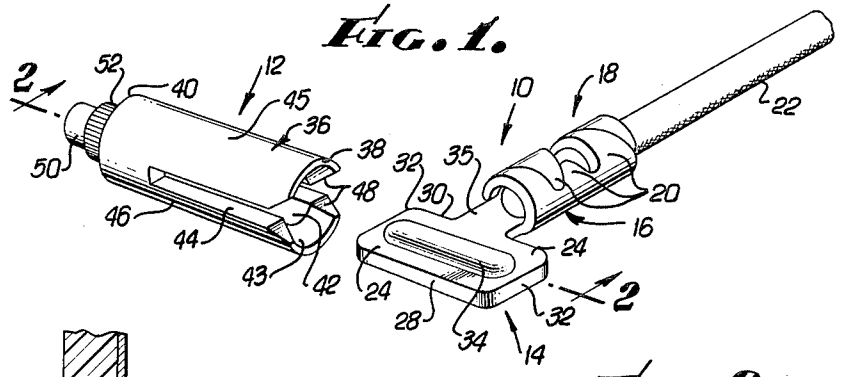


FIG. 2.

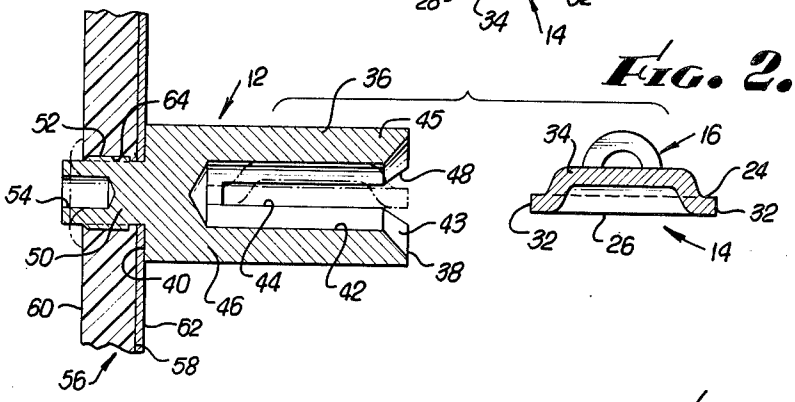


FIG. 4.

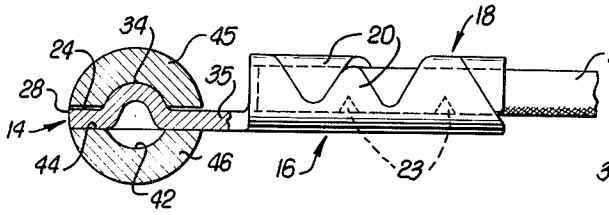


FIG. 5.

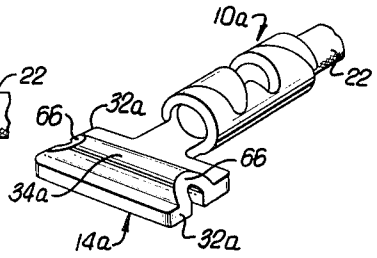


FIG. 3.

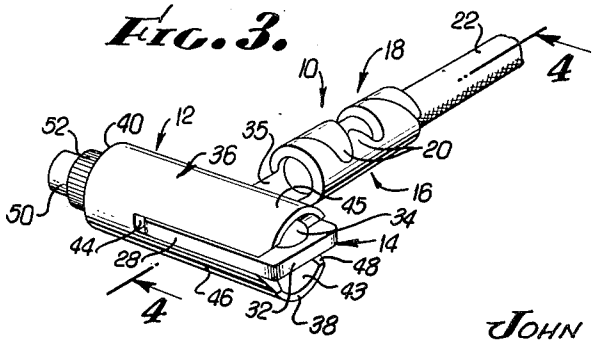
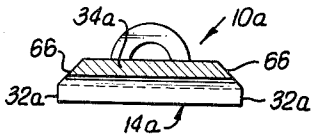


FIG. 6.



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MATING ELECTRICAL PIN AND SOCKET CONTACTS AND INSULATOR THEREFOR

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FIG. 7.

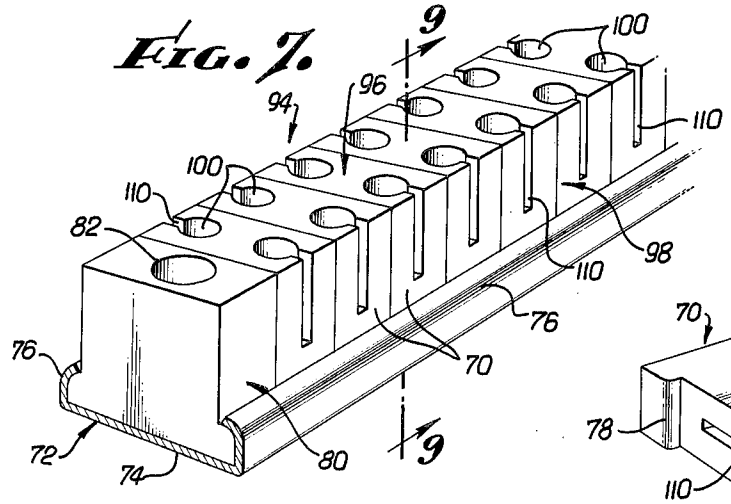


FIG. 8.

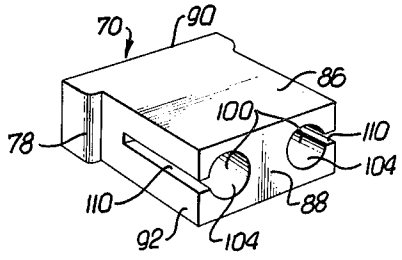


FIG. 9.

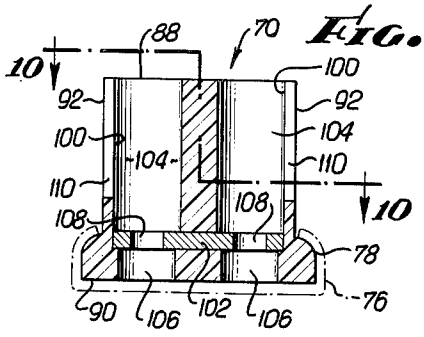


FIG. 12.

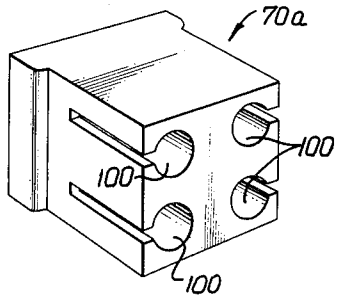


FIG. 10.

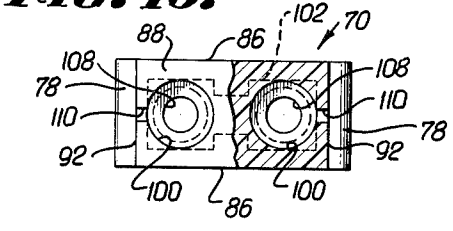


FIG. 13.

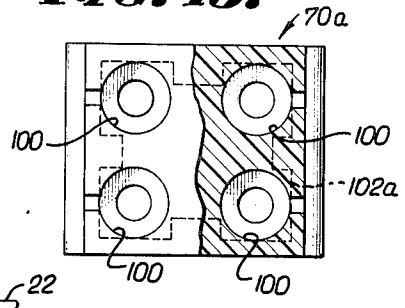
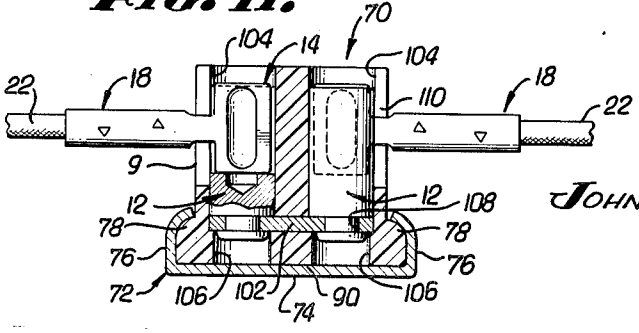


FIG. 11.



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United States Patent Office 3,200,367 Patented Aug. 10, 1965

3,200,367

MATING ELECTRICAL PIN AND SOCKET CONTACTS AND INSULATOR THEREFOR

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Filed Mar. 7, 1963, Ser. No. 263,477
21 Claims. (Cl. 339—198)

The present invention relates in general to electrical connectors, and more particularly to a novel combination of mating pin and socket contacts which, for a given size, have relatively large contacting surfaces and relatively strong spring-biased contacting pressure, and which, because of their novel construction, can be made much more compact than conventional pin and socket combinations having similar electrical characteristics; and the invention also relates to a combination of said pin and socket contacts with a novel modular insulator.

One problem in the electrical connector art with respect to the design of mating pin and socket contacts is to provide relatively strong spring biasing means for achieving pressurized contacting engagement. Such biasing means is usually embodied in the socket contact, and in many types of sockets this results in an undesirable increase in socket size, while in other types it results in only a relatively small area of contact between the mating contact members relative to the over-all size of the connection.

Another problem in connection with conventional mating pin and socket contacts is that both of the contacts are elongated members which mate coaxially in such a manner that is their mated condition they provide an electrical connection which is considerably longer than either the socket or the pin alone. The top-to-bottom space requirements for electrical connectors embodying such elongated pin and socket combinations are objectionable in some types of equipment where space is at a premium, such as in telephone equipment, computers and the like.

A further problem in the art is that conventional pin contact members are normally produced by machining, which is a relatively expensive operation and which must be held to close tolerances. Also, pin contact members of conventional construction, when made in small sizes, are relatively easily bent, and therefore must embody relatively expensive materials for strength, such materials frequently not being the best electrically conductive materials.

In view of these and other problems relating to conventional pin and socket contacts, it is an object of the present invention to provide a novel pin and socket combination which, for a given over-all size of the combination, has a relatively large contacting surface area and relatively strong spring-biased, pressurized contacting engagement.

Another object of the present invention is to provide a novel mating pair of pin and socket contacts wherein the mating portions of the contacts are axially slidably engageable in much the same manner as conventional pin and socket contacts, yet wherein the pin contact may be made of sheet metal by a simple blank-and-form or stamping operation, resulting in a pin contact which is inexpensive to produce and which is particularly strong for its size.

Another object of the invention is to provide a novel mating pair of pin and socket contacts wherein the forward, mating part of the socket comprises a pair of generally semicylindrical portions separated by a forwardly opening axial slot, these semicylindrical portions being resiliently spreadable, and wherein the pin contact member includes a generally flat head portion having an elongated bulge projecting outwardly from one side thereof, the head portion of the pin being resiliently frictionally engageable in the socket with the bulge engaged against the inner wall of one of the semicylindrical portions of the socket and with the flat opposite side of the head being engaged against the slot of the other semicylindrical portion of the socket.

A further object of the present invention is to provide a mating pin and socket contact combination of the character described wherein the pin contact member includes a body portion having conductor termination means thereon, the body portion extending generally at right angles to the elongated bulge in the head portion of the pin and comprising an integral extension of the generally flat head portion of the pin, whereby said body portion of the pin will extend outwardly generally at right angles to the axis of the socket when the head portion of the pin is slidably engaged in the slotted tubular forward mating portion of the socket, so that the over-all length of the mated pair of contacts in the direction of the axis of the socket is only substantially the length of the socket contact member.

An additional object of the invention is to provide a novel modular insulator for a mated pair of pin and socket contacts of the character described having a bore within which the socket is mounted, with a slot extending through a side wall of the insulator parallel with the bore and communicating with the bore, so that when the head portion of the pin is engaged in the slotted mating portion of the socket, the body portion of the pin will project outwardly through said slot in the insulator generally at right angles to the axis of the socket.

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

FIG. 1 is a perspective view, showing one form of pin and the mating socket according to the present invention in spaced relationship and aligned for being moved into mating engagement.

FIG. 2 is an axial, vertical section along the line 2—2 of FIG. 1 showing the pin dotted in its mated position.

FIG. 3 is a perspective view showing the pin and socket fully mated.

FIG. 4 is a transverse, vertical section along the line 4—4 in FIG. 3, with a portion in elevation, illustrating the mated pin and socket contacts.

FIG. 5 is a perspective view showing a modified form of pin contact member according to the present invention.

FIG. 6 is an end elevation view of the pin contact member shown in FIG. 5.

FIG. 7 is a perspective view illustrating a connector assembly embodying a plurality of modular insulators adapted to cooperate with the socket and pin contacts of the present invention.

FIG. 8 is a perspective view of one of the modular insulators alone.

FIG. 9 is a vertical section of one of the modular insulators taken on the line 9—9 in FIG. 7.

FIG. 10 is a horizontal section taken on the line 10—10 in FIG. 9, with a portion shown in top plan.

FIG. 11 is a vertical section similar to FIG. 9, but illustrating the socket and mating pin contacts of the present invention operatively positioned therein.

FIG. 12 is a perspective view illustrating a modified insulator module of double thickness, corresponding to a pair of the modules shown in FIGS. 7–11.

FIG. 13 is a view similar to FIG. 10, but illustrating the modified insulator module of FIG. 12.

Referring at first to FIGS. 1 through 4 of the drawings, the pin 10 and socket 12 are there illustrated in both

their separated and mated positions. The pin in its preferred form is generally in the shape of a T, and this form of pin will sometimes hereinafter be referred to as a "T-pin."

The T-pin is preferably made of sheet metal by a simple blank and form or stamping operation, and it includes a head portion 14 of generally flat, rectangular configuration, and an elongated body portion 16 extending from one side edge of the head portion generally in the same plane as the head portion and at right angles to the longitudinal or mating axis of the head portion. The body portion 16 has crimping structure 18 formed as a part thereof, this crimping structure 18 including a plurality of interfitting gripping fingers 20 adapted to encompass and grip an end portion of a wire 22. As illustrated in FIG. 4, the crimping structure 18 includes a plurality of sharp lances or tangs 23 which are adapted to penetrate through the insulation on the wire 22 so as to make electrical contact with the conductor in the wire. Alternatively, if desired the crimping structure 18 may be without such lances or tangs 23, and the insulation may be peeled back from the end of the wire so that the gripping fingers 20 make direct electrical contact with the conductor portion of the wire.

The head portion 14 of the T-pin 10 has generally flat, parallel sides 24 and 26, with generally parallel side edges 28 and 30, which are the long sides of the rectangle, and generally parallel end edges 32 which are the short sides of the rectangle. A dimple or bulge 34 is formed in the head portion 14 so as to project above the flat side 24. The dimple 34 is elongated, being disposed along the longitudinal axis of the rectangle of head portion 14, and is generally semicylindrical, with rounded ends that are disposed inwardly of the end edges 32 of the rectangle.

The elongated body portion 16 of T-pin 10 extends outwardly from the center of the side edge 30 of head portion 14, generally in the plane of the head portion 14 and at right angles to the elongated dimple or bulge 34. Preferably, the elongated body portion 16 includes a flat neck portion 35 in the plane of head portion 14 which is immediately adjacent to the head portion 14 and between head portion 14 and the crimping structure 18. This flat neck portion 35 cooperates with the novel modular insulator of the present invention in the manner hereinafter described in detail.

The socket contact member 12 comprises a generally cylindrical body 36 having a front end 38 and having a rear end which defines a rearwardly facing shoulder 40. The body 36 has a forwardly opening bore 42 axially disposed therein, the bore 42 having a lead-in chamber 43 at its forward end. The rear end of the bore is disposed forwardly of the rear end shoulder 40 of the socket body.

An axially arranged, diametrical slot 44 extends rearwardly from the front end 38 of the body and divides the forward part of the socket body into a pair of generally semicylindrical body sections 45 and 46. The slot 44 has a lead-in bevel 48 at its forward opening. The semicylindrical body sections 45 and 46 are composed of resilient metal so as to be resiliently spreadable for frictional engagement with the head portion 14 of the T-pin 10 in the manner hereinafter described in detail.

The socket contact member 12 includes an axially disposed, rearwardly projecting mounting boss 50 which projects rearwardly from the rear end 40 of the body, mounting boss 50 having external serrations 52 thereon and having a rearwardly opening riveting hole 54. Although the riveting hole 54 is shown as a relatively shallow bore extending only part-way through the mounting boss 50, it is to be understood that the hole 54 may extend all of the way forward into communication with the primary bore 42.

Mating of the T-pin 10 and socket 12 is accomplished by aligning the head portion 14 of the pin with the socket in the manner shown in FIGS. 1 and 2, with the head portion 14 of the pin substantially co-planar with the slot 44 of the socket, and then slidably engaging the pin head portion 14 in the socket 12 so that the flat portions of head 14 adjacent to the side edges 28 and 30 are slidably received in the diametrically opposed portions of the socket slot 44, and the elongated dimple 34 is slidably received in the half-bore portion of one of the semicylindrical body sections 45 or 46.

Preferably, the thickness of the flat part of the pin head portion 14 is the same as or slightly less than the normal width of the slot 44 in the socket for easy sliding engagement of the flat part of the head in the slot. However, the top-to-bottom thickness between the crown of dimple 34 and the flat surface 26 on the other side of the head portion 14 of the pin is slightly greater than the spacing between the plane of the flat slot surfaces on one of the semicylindrical body sections 45 or 46 and the center of the half-bore surface in the other semicylindrical body section 45 or 46. With such construction, there is a frictional engagement between the flat side 26 of the pin head and the slot surfaces on one of the body sections 45 or 46, and between the crown of the dimple 34 and a portion of the wall of the bore 42 in the other body section 45 or 46, with the semicylindrical body sections 45 and 46 springing outwardly slightly at opposite sides of the slot 44. In this manner, a firm, spring-biased frictional engagement is provided between the pin and socket to provide the desired contacting pressure, and a relatively large amount of contacting surface area is provided, while at the same time the mated pin and socket contacts are quite small in combination, and are particularly short in the direction of the axis of the socket, the length of mated pair of contacts being only substantially the length of the socket itself.

The slotted socket construction permits the elongated body portion 16 of the pin contact member 10 to extend outwardly from the side of the socket when the contacts are mated in a direction generally at right angles to the axis of the socket, so that said elongated body portion 16 of the pin does not add to the length of the socket when the pin and socket are mated, and so that a conductor wire 22 likewise will not extend axially relative to the socket to increase the length of the combination, but will extend outwardly generally at right angles to the body of the socket.

It is apparent that the T-pin 10 may be rotated 180° about the axis of its elongated body portion 16 and then engaged in the same manner as described hereinabove. Similarly, it will be apparent that the socket contact member 12 may be rotated 180° about its cylinder axis and engagement then effected in the same manner as described hereinabove.

The type of base or mounting structure for the socket contact member 12 shown in the drawings, which includes the rearwardly facing shoulder 40 of the socket body and the reawardly projecting mounting boss 50, is particularly well adapted for mounting the socket contact member 12 on a printed circuit board 56, in the manner illustrated in FIG. 2. This socket mounting structure is also well adapted for mounting the socket contact member 12 in the modular insulator of the present invention as shown in FIGS. 7 to 13.

The printed circuit board 56 has flat, parallel front and rear surfaces 58 and 60, respectively, with a printed conductor element 62 on the front surface 58. A hole 64 extends through the board 56 in the region of conductor 62, and the mounting boss 50 of the socket contact element 12 is forced through this hole 64 in the board 56, with the boss serrations 52 gripping the material of the board 56. The shoulder 40 on the body of the socket contact member makes electrical contact with the printed conductor 62, and the rear end of boss 50 projects outwardly past the rear surface 60 of the board so that the rear end of the boss can be riveted outwardly for perma-

nently affixing the socket contact member **12** to the board. The knurling on boss **50** will, however, normally adequately secure the socket contact on the printed circuit board without the necessity of the riveting step.

The rear or base structure of the socket contact member **12** shown in the drawings and described hereinabove is very short, so that the over-all length of the socket member **12** is much less than many types of socket contacts, such as those which are adapted to be soldered or crimped to a wire conductor and have termination means for this purpose which is coaxial with the socket. This very short type of socket shown and described herein is particularly useful in connection with the T-pin **10** which does not add to the length of the socket in the mated position of the pin and socket contacts, for applications where top-to-bottom space is at a premium, as in telephone equipment, computers and the like. However, it is to be understood that the present invention is not in any way limited to the particular socket mounting or termination means shown in the drawings and described hereinabove, and that the socket contact member of the present invention may have various conductor termination means or mounting means thereon.

FIGS. 5 and 6 illustrate a modified T-pin **10***a* which in most respects is the same as the T-pin **10** of FIGS. 1 through 4, but which differs therefrom by having a straight-through dimple **34***a* extending all of the way between the end edges **32***a* of the head portion **14***a* of the pin. Lead-in bevels **66** are provided at the ends of the dimple **34***a*. The T-pin **10***a* shown in FIGS. 5 and 6 is operatively engaged with the socket contact member **12** in the same manner as the T-pin **10**.

FIGS. 6 to 13 illustrate the modular insulator structures which are particularly adapted for use in combination with the T-pin and mating socket contacts of the present invention. The insulator block or module **70** shown in FIGS. 7 to 11 is the basic module, while the insulator block **70***a* of FIGS. 12 and 13 is twice the thickness of module **70** and may be considered as a double module.

The insulator modules are adapted to be removably slidably mounted in a slide track **72** having a generally flat bottom **74** and in-turned, upwardly extending side flanges **76**. A plurality of the insulator modules **70** are adapted to be slidably engaged in the track **72**, the modules **70** having laterally projecting ears **78** at their bottoms which are gripped by the side flanges **76** of the track. A pair of end blocks **80** having the same general external shape as the insulator modules **70** are slidably engaged in the track for securing the modules **70** in position, each end block **80** having a hole **82** therethrough which registers with a respective hole through the bottom **72** of the track so that the end blocks **80** can be bolted to the track.

Each of the insulator modules **70** has a pair of flat, generally parallel end surfaces **86**, a flat top surface **88**, a flat bottom surface **90** generally parallel to the top surface **88**, and a pair of generally flat, parallel side surfaces **92**. In the assembled relationship of the insulator modules **70** in the track **72**, they form an assembled insulation body **94** having a generally flat top face **96** and generally flat, parallel side faces **98**.

Each of the insulator modules **70** has a pair of parallel bores **100** extending therethrough from the top surface **88** to the bottom surface **90**, and disposed within each module **70** is a jumper plate **102** made of electrically conductive material. The jumper plate **102** is generally parallel to the top and bottom surfaces **88** and **90**, respectively, of the module and extends across both of the bores **100** so as to divide each of the bores **100** into an upper bore cavity **104** and a lower bore cavity **106**.

The jumper plate **102** has a pair of openings **108** therethrough which are smaller than the bores **100** but are axially aligned with the respective bores **100**.

One of the socket contact members **12** is disposed in each of the upper bore cavities **104**, and the rearwardly facing shoulder **40** of the socket seats against the upper

surface of jumper plate **102**, with the mounting boss **50** extending through the respective opening **108** in the jumper plate and the end of the mounting boss **50** being exposed through lower bore cavities **106** so that it can be riveted over the lower surface of the jumper plate so as to mechanically fasten and electrically connect the sockets **12** to the jumper plate. If desired, the knurled end of boss **50** can be tightly driven into the jumper plate opening **108** without turning over the end of boss **50**, and the socket contact will be adequately frictionally secured. In this manner a through electrical connection is provided in the module **70** between the two sockets **12**.

A slot **110** is provided in each side wall of the insulator module **70** parallel to the respective bore **100** and so as to provide an elongated opening between the respective bore **100** and the adjacent side surface **92** which extends from a point slightly above the jumper plate **102** upwardly to the top surface **88** of the module. One side of the slot **44** of the socket contact member **12** in each bore is aligned with the respective slot **110** in the module. In this manner, a T-pin **10** can be operatively engaged in each of the socket contact members **12** in module **70**, with the flat neck portion **35** of the T-pin extending through the respective slot **110** in the module, and with the elongated body portion **16** of the T-pin extending outwardly from the respective side surface **92** of the module generally at right angles thereto.

Accordingly, a plurality of the modular insulators **70** with socket contact members **12** supported therein forming the assembled body **94** provides for a number of simple through electrical connections, and this type of modular connector has extensive use in telephone equipment. Although this modular form of connector provides excellent and relatively permanent electrical connections, the pins and their respective conductors can be interchanged and switched around as desired for revising and reconstituting circuits, which is particularly useful in telephone work.

The double module **70***a* of FIGS. 12 and 13 illustrates that other modular insulator forms may be employed with the pin and socket contacts of the present invention. This module **70***a* has twice the thickness of module **70**, and has two pairs of the bores **100** and accompanying slots **110**. The jumper plate **102***a* is common to all four of the bores **100**, so as to provide electrical connection between four socket contact members mounted in the respective bores **100**.

While the instant invention has been shown and described herein in what are conceived to be the most practical and preferred embodiments, 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 connection which comprises an elongated socket contact member having front and rear ends, said socket member having a forward mating portion comprising a pair of elongated sections separated by a forwardly opening, longitudinally arranged slot, said sections being resiliently spreadable and at least one of said sections having a forwardly opening, longitudinally arranged groove therein communicating with said slot, and a pin contact member including a generally flat mating portion having a bulge projecting outwardly from a side thereof, said mating portion of the pin member being resiliently frictionally engageable in said mating portion of the socket member with said bulge engaged in said groove in said one socket section and with the opposite side of said mating portion of the pin member engaged against the side of the slot on the other said socket section.

2. An electrical connection which comprises an elon-

gated socket contact member having front and rear ends, a forwardly opening, longitudinally arranged slot in said socket member dividing the forward portion of the socket member into two sections, said sections being resiliently spreadable, at least one of said sections having a forwardly opening, longitudinally arranged groove therein communicating with said slot and facing the other section, and a pin contact member including a generally flat head portion slidably engageable in said slot of the socket member, said head portion having a bulge projecting outwardly from a side thereof which is slidably engageable in said groove from the open front end thereof, the transverse dimension from the bottom of said groove to the plane of the side of said slot on said other section normally being less than the dimension from the crown of said bulge to the plane of the opposite side of said head portion, whereby when said head portion of the pin member is inserted into the socket member the head portion will be resiliently frictionally engaged between said groove in said one socket section and the side of the slot on said other section.

3. An electrical connection as defined in claim 1, wherein said bulge is elongated and is longitudinally slidably engageable in said groove, whereby the pin member is oriented with respect to the socket member.

4. An electrical connection which comprises an elongated, generally cylindrical socket contact member having front and rear ends and a forwardly opening axial bore, said socket member having a forward mating portion comprising a pair of generally semicylindrical sections separated by a forwardly opening axial slot, said sections being resiliently spreadable, and a pin contact member including a generally flat mating portion having an elongated bulge projecting outwardly from a side thereof, said mating portion of the pin member being resiliently frictionally engageable in said mating portion of the socket member with said bulge engaged against the wall of the bore in one of said socket sections and with the opposite side of said mating portion of the pin member engaged against the side of the slot on the other said socket section.

5. An electrical connection which comprises an elongated, generally cylindrical socket contact member having front and rear ends, a forwardly opening axial bore in said socket member, a forwardly opening, longitudinally arranged, generally planar slot in said socket member dividing the forward portion of the socket member into two generally semicylindrical sections, said sections being resiliently spreadable, and a pin contact member having a generally flat head portion slidably engageable in said slot of the socket member, said head portion having an elongated bulge projecting outwardly from a side thereof which is slidably engageable in said bore from the open front end thereof, the other side of said head portion having a substantially planar surface, the transverse dimension from the bore surface in each section at its deepest point from the slot to the plane of the side of the slot on the other section normally being less than the dimension from the crown of said bulge to said substantially planar surface of the head portion, whereby when said head portion of the pin member is inserted into the socket member the head portion will be resiliently frictionally engaged therein with said bulge engaged against the bore surface in one section and said substantially planar surface of the head portion engaged against the side of the slot on the other section.

6. An electrical connection which comprises an elongated socket contact member having front and rear ends, said socket member having a forward mating portion comprising a pair of elongated sections separated by a forwardly opening, longitudinally arranged slot, at least one of said sections having a forwardly opening, longitudinally arranged groove therein communicating with said slot, and a pin contact member including a generally flat head portion having an elongated bulge projecting outwardly from a side thereof and including an elongated body portion integral with said head portion, said body portion having conductor termination means thereon and extending generally at right angles to the longitudinal axis of said bulge, said head portion of the pin member being engageable in said slot of the socket member with said bulge engaged in said groove and with said body portion of the pin member extending externally of the socket member generally at right angles to the socket member.

7. An electrical connection as defined in claim 6, wherein said body portion of the pin member projects outwardly from an edge of said slot in the socket member intermediate the ends of the socket member when the pin and socket members are fully engaged.

8. An electrical connection as defined in claim 6, wherein said body portion of the pin member has a flat neck portion substantially co-planar with said head portion and intermediate said head portion and said conductor termination means.

9. An electrical connection as defined in claim 7, wherein said pin member is generally T-shaped, said head portion of the pin member being generally symmetrical in the longitudinal direction of said bulge on opposite sides of the longitudinal axis of said body portion of the pin member.

10. An electrical connection which comprises an elongated, generally cylindrical socket contact member having front and rear ends, a forwardly opening axial bore in said socket member, a forwardly opening, longitudinally arranged, generally planar slot in said socket member dividing the forward portion of the socket member into two generally semicylindrical sections, and a pin contact member including a generally flat head portion slidably engageable in said slot of the socket member, said head portion having an elongated bulge projecting outwardly from a side thereof which is longitudinally slidably engageable in said bore from the open front end thereof, the pin member including an elongated body portion integral with said head portion and extending externally of said socket generally at a right angle with respect to the longitudinal axis of said bulge, said body portion having conductor termination means thereon.

11. An electrical connection as defined in claim 10, wherein said sections of the socket member are resilintly spreadable, the transverse dimension from the bore surface in each section at its deepest point from the slot to the plane of the side of the slot on the other section normally being less than the dimension from the crown of said bulge to the opposite side of said head portion, whereby when said head portion of the pin member is inserted into the socket member the head portion will be resiliently frictionally engaged therein with said bulge engaged against the bore surface in one section and said substantially planar surface of the head portion engaged against the side of the slot on the other section.

12. An electrical connection as defined in claim 10, wherein said body portion of the pin member extends outwardly from the head portion of the pin member generally in the plane of the head portion.

13. An electrical connection as defined in claim 10, wherein said pin member is generally T-shaped, said head portion of the pin member being generally symmetrical in the longitudinal direction of said bulge on opposite sides of the longitudinal axis of said body portion of the pin member.

14. An electrical connection as defined in claim 13, wherein the length of said head portion of the pin member in the longitudinal direction of said bulge is greater than the length of the bulge, and the ends of the bulge are spaced inwardly from their respective adjacent edges of the head portion.

15. An electrical connection as defined in claim 13, wherein said bulge extends along substantially the entire length of said head portion of the pin member, with the

ends of the bulge terminating substantially at the respective adjacent edges of the head portion.

16. An electrical connection as defined in claim 13, wherein said head portion of the pin member is substantially rectangular, with the long sides of the rectangle substantially parallel to said elongated bulge and with the short sides of the rectangle substantially at right angles to the longitudinal axis of the bulge, said body portion of the pin member extending from substantially the center of one of the long sides of the rectangle.

17. An electrical connection as defined in claim 16, wherein the length of the rectangular head portion of the pin member is substantially the same as the length of said slot in the socket member, and the width of said rectangular head portion is substantially the same as said slot.

18. An electrical connector member which comprises an insulator having top and bottom surfaces, side surfaces and end surfaces, a bore in said insulator generally parallel and adjacent to a side surface of the insulator and opening at the top surface of the insulator, an elongated slot aligned with the bore and extending between the bore and said adjacent side surface of the insulator and opening at said top surface, an elongated socket contact member mounted in said insulator bore, said socket member having front and rear ends, with the front end directed toward the open end of the bore, said socket member having a forward mating portion comprising a pair of elongated sections separated by a forwardly opening, longitudinally arranged slot, said socket slot being parallel to and aligned with said insulator slot, at least one of said sections having a forwardly opening, longitudinally arranged groove therein communicating with said socket slot, and a pin contact member including a generally flat head portion having an elongated bulge projecting outwardly from a side thereof and including an elongated body portion integral with said head portion, said body portion having conductor termination means thereon and extending generally at right angles to the longitudinal axis of said bulge, said head portion of the pin member engageable in said slot of the socket member with said bulge engaged in said groove and with said body portion of the pin member extending through said insulator slot and externally of the insulator generally at right angles to the socket member.

19. An electrical connector member as defined in claim 18, wherein said body portion of the pin member has a flat neck portion substantially co-planar with said head portion and intermediate said head portion and said conductor termination means, said neck portion extending through said slot in the insulator.

20. An electrical connector member as defined in claim 18, which includes a pair of said insulator bores and respective insulator slots at opposite sides of the insulator, a pair of said socket contact members in the respective said insulator bores, and a pair of said pin contact members in the respective said socket contact members, and which includes an electrically conducting jumper in the insulator and extending between the insulator bores, said jumper being electrically connected to each of said socket contact members.

21. An electrical connector unit comprising a plurality of electrical connector members which are each comprised of an insulator having top and bottom surfaces, side surfaces and end surfaces, a bore in said insulator generally parallel and adjacent to a side surface of the insulator and opening at the top surface of the insulator, an elongated slot aligned with the bore and extending between the bore and said adjacent side surface of the insulator and opening at said top surface, an elongated socket contact member mounted in said insulator bore, said socket member having front and rear ends, with the front end directed toward the open end of the bore, said socket member having a forward mating portion comprising a pair of elongated sections separated by a forwardly opening, longitudinally arranged slot, said socket slot being parallel to and aligned with said insulator slot, at least one of said sections having a forwardly opening, longitudinally arranged groove therein communicating with said socket slot, and a pin contact member including a generally flat head portion having an elongated bulge projecting outwardly from a side thereof and including an elongated body portion integral with said head portion, said body portion having conductor termination means thereon and extending generally at right angles to the longitudinal axis of said bulge, said head portion of the pin member engageable in said slot of the socket member with said bulge engaged in said groove, said body portion of the pin member having a flat neck portion substantially co-planar with said head portion and intermediate said head portion and said conductor termination means, said neck portion extending through said slot in the insulator, and slide track means supporting said connector members in end-to-end stacked relationship forming an assembled insulation body, said top surfaces of the insulators being aligned to form a top surface of the assembled insulation body, and said side surfaces of the insulators being aligned to form side surfaces of the assembled insulation body.

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