

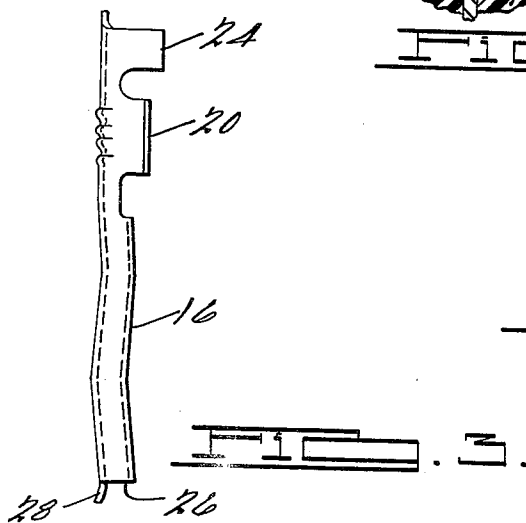
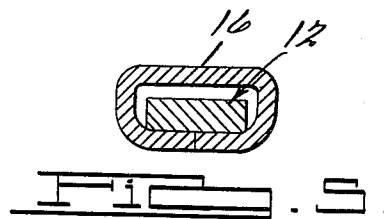
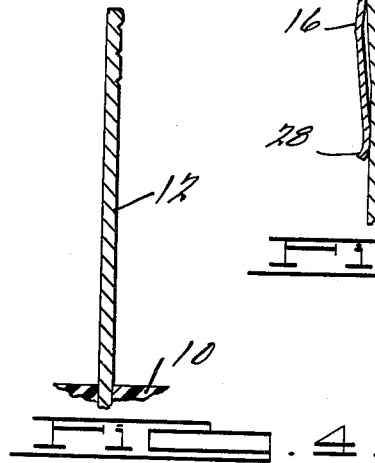
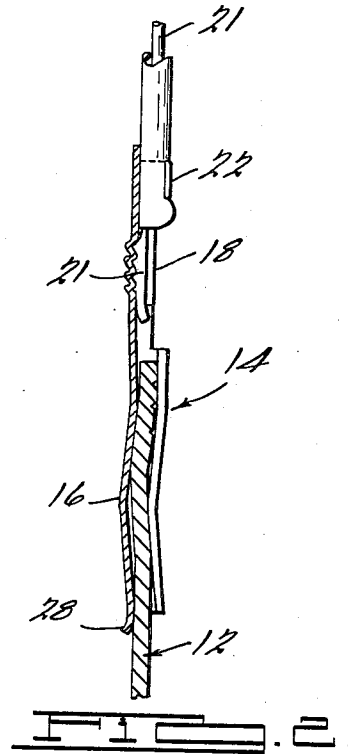
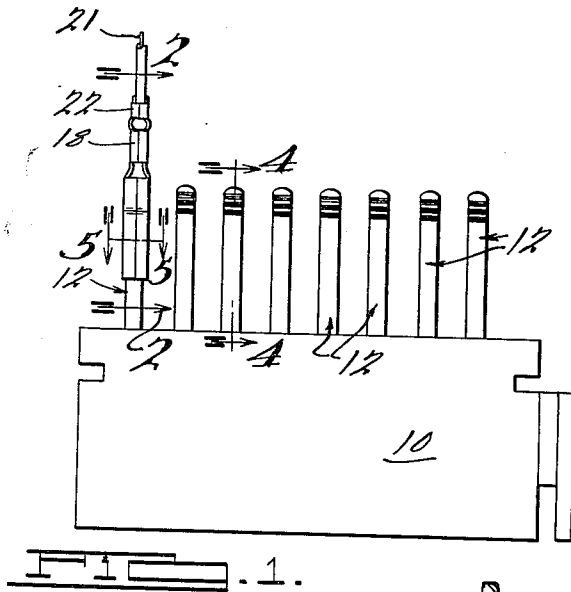
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Q. BERG

3,010,093

ELECTRICAL CONNECTOR ASSEMBLY AND ELEMENT

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INVENTOR.

Quentin Berg.

BY

Balluff and McKinley
ATTORNEYS.

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3,010,093 ELECTRICAL CONNECTOR ASSEMBLY AND ELEMENT

Quentin Berg, 1550 Brandt Ave., New Cumberland, Pa.
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1 Claim. (Cl. 339—256)

This invention relates to electrical connector assemblies and elements thereof.

Pin type terminals are extensively used. This invention contemplates an electrical connector assembly in which pin type terminals form one element thereof. Because of the long narrow shape of such pin type terminals and for other reasons they are not adapted for use with disconnects of the type shown in my prior Patent No. 2,854,648 issued September 30, 1958, for Electrical Connector, wherein the socket element of the disconnect is warped upon insertion therein of the spade type terminal for frictionally retaining the spade type terminal in the socket.

According to the present invention, the socket element of the assembly comprises a long narrow tube bent into serpentine form for telescopically receiving the pin type terminal, said tubular socket being more rigid than the pin type terminal so that the pin type terminal when inserted in the socket will be bent and conform to the tubular socket whereby the pin type terminal acquires the necessary spring tension to generate the required pull off force for frictionally retaining itself in the socket. The tubular disconnect element of this invention thus makes it possible to use pin type terminals with a disconnect to form a quickly made and quickly detachable electrical connection and in addition makes it possible to closely position a multiplicity of pin type elements in a base so as to form a part of a relatively compact multiple disconnect assembly.

A principal object of this invention, therefore, is to provide a disconnect socket terminal for use with pin type terminals.

Another object of the invention is to provide a quickly detachable electrical assembly comprising a long narrow pin type terminal and a disconnect therefor.

Other and further objects of the invention will be apparent from the following description and claims and may be understood by reference to the accompanying drawing, which by way of illustration shows a preferred embodiment of the invention and what I consider to be the best mode of applying the principles thereof. Other embodiments of the invention may be used without departing from the scope of the present invention as set forth in the appended claim.

In the drawings:

FIG. 1 is an elevational view of a base provided with a series of pin type terminals and showing a disconnect terminal embodying the invention assembled to one of such pin type terminals;

FIG. 2 is an enlarged sectional view taken along the line 2—2 of FIG. 1;

FIG. 3 is an enlarged elevational view of the socket disconnect;

FIG. 4 is an enlarged sectional view of one of the pin type terminals taken along the line 4—4 of FIG. 1;

FIG. 5 is an enlarged cross sectional view taken along the line 5—5 of FIG. 1.

In FIG. 1 there is shown a base 10 provided with a series of pin type terminals 12, each terminal 12 being suitably anchored in the base 10 and connected to a current conductor. The pin type terminals are long and narrow and made out of metal stock which makes them relatively stiff, but flexible.

The disconnect or socket element indicated generally at 14 comprises an integral piece of thin sheet metal such

as phosphor bronze which is formed to provide an elongated tubular socket 16 for receiving and frictionally holding a pin type connector 12. The disconnect 14 comprises a unitary piece of solder-coated sheet metal stock which is wrapped so as to form a tube and an integral ferrule 18 at one end thereof. The ferrule 18 consists of a pair of tongues or prongs 20 which are adapted to be crimped around the end of a current conductor 21. Another ferrule 22 comprising a pair of tongues or prongs 24 is provided on the terminal 14 and is adapted to be crimped around the insulation on the current conductor. The ferrules 18 and 22 may be of the construction illustrated in my prior Patent No. 2,854,648 and when crimped on the wire and the insulation therefor serve to secure the element 14 to the current conductor and provide good electrical connection therebetween.

The tube 16 internally thereof forms a tubular socket for telescopically receiving a pin type connector or terminal 12 and one end 26 of the tube defines an entrance to the socket through which the connector 12 is inserted therein. The tube 16 may be provided with a projection 28 at the entrance end thereof for guiding the lead end of the terminal 12 into the socket formed by the tube 16. The tube 16 is bent into sinuous form and is more rigid than the pin type terminal connector 12 so that the pin type connector when inserted in the socket formed by the tube 16 will bend and conform to the shape of the socket whereby the pin type connector 12 acquires the necessary spring tension for frictionally retaining itself in the socket. The cross section of the socket is substantially greater than that of the pin type connector 12 as shown in FIG. 5 so that but for the serpentine configuration impressed upon the pin type element 12 when inserted in the socket, the pin type element 12 would have a very loose fit in the tubular socket and would not be retained therein. However, as shown in FIG. 2 the tube 16 is bent to such an extent that there is good contact at a number of spaced areas between the pin type element 12 and the tubular socket thus providing good conductivity therebetween. It will be appreciated that the frictional grip between the disconnect 14 and the pin type element 12 will depend upon the amplitude and number of the convolutions in the tube 16 and I contemplate that these may be varied within wide limits, depending upon the stock out of which elements 12 and 14 are made, the size thereof and the requirements for the electrical connection provided by and between the elements 12 and 14.

While I have illustrated and described a preferred embodiment of my invention, it is understood that this is capable of modification, and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claim.

I claim:

An assembly comprising an electrical connector element and a pin type connector, said element comprising an integral piece of thin sheet metal formed to provide an elongated tubular socket for telescopically receiving and frictionally holding said pin type connector, said element comprising a sheet metal piece which is formed so as to define a tube of substantially uniform cross section open at both ends and having an integral ferrule at one end thereof, said tube forming a tubular socket for receiving said pin type connector and the other end of said tube defining an entrance to said socket through which said connector is inserted therein so that said socket and connector may be operatively arranged and separated by relative longitudinal sliding movement, said pin type connector comprising a stiff but flexible long narrow terminal of substantially uniform cross section throughout its length, the cross section of which is substantially

less than that of said socket, said tube being bent into sinuous form and being more rigid than such pin type connector so that such pin type connector when inserted in said socket will be reversely bent into sinuous form and engage opposite sides of said socket along its length and conform to the shape of the tubular socket whereby said pin type connector acquires the spring tension for frictionally retaining itself in said socket, said ferrule being constructed for crimping onto a wire and when so crimped

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being of a size in cross section of the order of the cross section of said socket.

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