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2,389,115

ELECTRICAL CONNECTOR

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Fig. 1

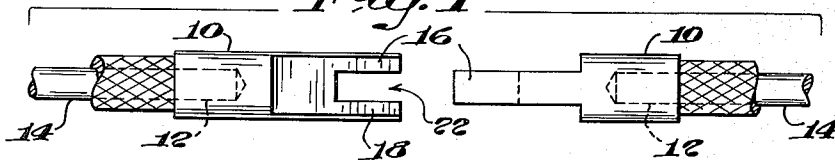


Fig. 2

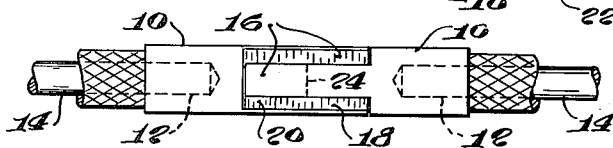
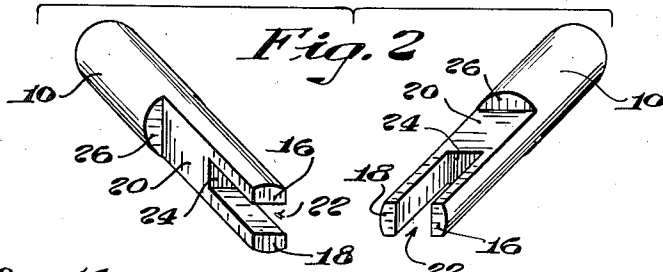


Fig. 3

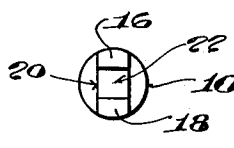


Fig. 4

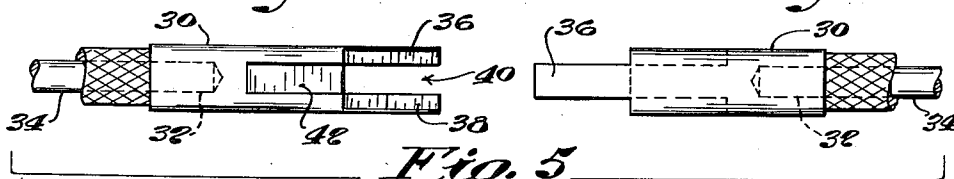


Fig. 5

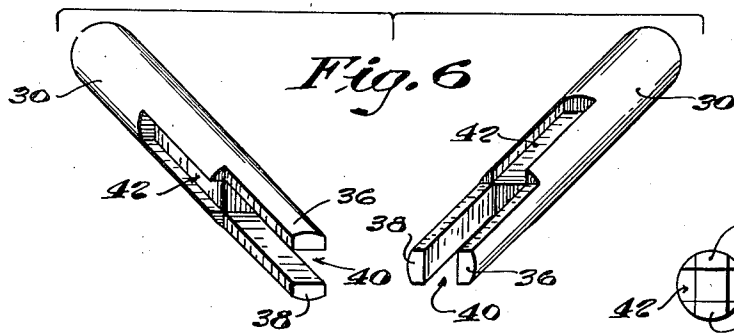


Fig. 6

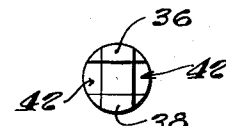


Fig. 8

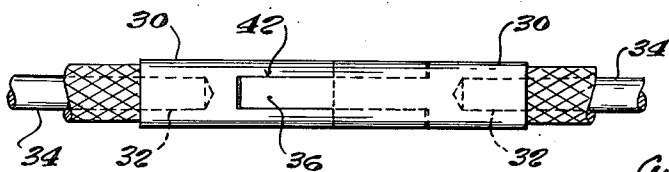


Fig. 7

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ELECTRICAL CONNECTOR

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8 Claims. (Cl. 287-76)

This invention relates to an electrical connector.

The invention has for an object to provide a novel and improved electrical connector of the type comprising identical members which may be coupled together to form an electrical connection, and which is of simplified construction, may be economically manufactured and used efficiently as a universal connector upon cables and the like.

With this general object in view and such others as may hereinafter appear, the invention consists in the electrical connector and in the various structures, arrangements and combinations of parts hereinafter described and particularly defined in the claims at the end of this specification.

In the drawing illustrating the preferred embodiment of the invention, Fig. 1 is a side elevation of two connectors embodying the present invention prior to engagement; Fig. 2 is a perspective of the two connectors shown in Fig. 1; Fig. 3 is a view similar to Fig. 1 showing the connectors in engagement; Fig. 4 is an end view of a connector; Fig. 5 is a side elevation of a modified form of the connectors prior to engagement; Fig. 6 is a perspective view of the same; Fig. 7 is a view similar to Fig. 5 showing the connectors in engagement; and Fig. 8 is an end view of the modified form of connector shown in Fig. 5.

In general, the present invention contemplates a novel and improved electrical connector designed for use as an "either end" or universal connector in that identical connectors may be coupled together to form an electrical connection. In accordance with the present invention, the connector comprises a body portion, made preferably from a bar or rod of spring brass, and provision is made for enabling a cable to be connected to the body portion, as for example by the usual type of soldering socket in one end of the body portion. The body portion is slotted longitudinally at its second end to form two opposed and spaced fingers and the shape and thickness of the intermediate section of the body portion in the rear of the slot is such as to permit the two fingers of an identical connector disposed at right angles to the first connector to straddle such intermediate section in tightly fitting and sliding engagement to thereby produce an efficient electrical connection between the connectors.

Referring now to the drawing, 10 represents the body portion of the connector which is preferably made of a rod or bar stock and of spring brass. The body portion may be provided with a socket 12 at one end thereof to permit the reception and soldering therein of the wire or cable 14.

The body portion 10 is preferably elongated as shown and provided at its end portion remote from the socket 12 with two fingers or contact members 16, 18 formed integrally with and extending from a flattened portion 20 of the body 10. In practice, the cylindrical rod may be milled or otherwise machined on opposed sides longitudinally of the rod for a substantial distance at least equal to the length of the fingers 16, 18 to provide an intermediate section of reduced thickness having parallel flat surfaces on opposed sides. The end of the flattened portion may then be provided with a longitudinal slot 22 to form the opposed fingers 16, 18, the slot preferably extending approximately one half the distance of the milled or flattened portion. The thickness of the flattened portion is preferably substantially equal to or slightly greater than the width of the slot 22, or, the space between the fingers 16, 18. As thus produced it will be observed that in the form of connector shown in Figs. 1, 2 and 3, the opposed fingers 16, 18 are substantially rectangular in cross section, three sides being flat and the fourth side comprising a continuation of the body portion of the rod.

In making an electrical connection with two identical connectors of the structure above described one connector is rotated through 90° about its longitudinal end with relation to the second connector. As the two connectors are then moved together the fingers 16, 18 of one connector in tightly fitting engagement slide upon the flattened portion 20 constituting the intermediate section of the body portion, so that between the inner or adjacent surfaces of the fingers and the intermediate section of the body portion, an efficient electrical contact is made. The width of the slot 22 is intentionally made slightly less than the width of the flattened portion 20 and this permits the fingers 16, 18 to spring slightly as they are forced to slide upon said flattened portions 20 thus obtaining a tight clamping engagement. The fingers may and preferably will be substantially equal to or slightly shorter than the flattened portion 20, that is, slightly shorter than the distance from the bottom 24 of the slot 22 to the end 26 of the flattened portion so that when the connectors are fully engaged or coupled together the bottom portions 24 of the slots will meet, as indicated in Fig. 3, thus affording additional area of contacting surface between the connectors.

Referring now to Figs. 5 to 8, illustrating a modified form of the present connector, 30 represents the cylindrical body portion of the metallic rod from which the connectors are made and

which is provided with a socket 32 for the reception of the wire 34 similar to the socket 12 as above described. The engaging end of the connector is provided with similar fingers 36, 38 formed by flattening the rod on opposed sides and providing a slot 40 at right angles to the flattened portion, as illustrated. In the embodiment illustrated in Figs. 5 to 8 a pair of opposed grooves 42 are cut or otherwise formed in the body portion, extending beyond the bottom of the slot 40, and for at least the length of the fingers arranged to receive the fingers 36, 38 of another identical connector when the two identical connectors are telescopically joined to form the connection, shown in Fig. 7. The shape and thickness of the intermediate section of the body portion between the bottoms of the grooves 42 are such as to permit the fingers 36, 38 of the complementary connector to straddle the same in tightly fitting engagement. With this construction it will be observed that substantial contacting area is provided between the fingers 36, 38 and the walls, and particularly the bottoms of the grooves 42, to provide an efficient electrical connection.

As in the embodiment illustrated in Figs. 1 to 4, the slotted portion 40 of the embodiment shown in Figs. 5 to 8 may and preferably will be slightly less in width than the reduced body portion or distance between the grooves 42 which the fingers are arranged to embrace so as to provide a firm clamping action between the contacting members. However, if desired, satisfactory clamping action may be obtained by constructing the fingers of spring brass or equivalent and by bending the fingers slightly inwardly toward each other so as to enable them to be yieldingly urged outwardly when engaged with the grooved portions of another connector to obtain a firm contact between the parts.

From the above description of the preferred embodiments of the invention it will be observed that the present connector may be economically manufactured, the engaging portions comprising the spaced fingers and the reduced body portion being formed as a continuation of the main body portion. It will also be observed that each connector is symmetrical in cross section throughout its length so that by holding two connectors end to end and rotating one at right angles to the other the fingers of each may be slidably engaged over the reduced body portion of the other to form an efficient interlocking electrical connection.

As above pointed out, the present connector may be used as a universal coupling member in place of the usual plug and socket members, and finds particular use in connecting individual wires in electrical circuits carrying low tension and not too excessive currents. It will be observed that the present connector is simple in construction, may be economically manufactured and is efficient in operation. Although the present connectors have been illustrated herein as having a cylindrical body portion it will be apparent that a rod of square or other suitable cross section may be employed with equal advantage.

While the preferred embodiment of the invention has been herein illustrated and described, it will be understood that the invention may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:

1. A universal connector comprising a body

having provision for connection to a cable and having one end portion provided with two opposed and spaced fingers having adjacent faces parallel to one another, the body portion in the rear of the slot for a distance at least equal to the length of the fingers, having two parallel surfaces spaced apart a distance substantially equal to the distance between the fingers whereby to permit the fingers of an identical connector to straddle such a portion for the length of the fingers in tightly fitting and sliding engagement to thereby provide an efficient electrical connection.

2. A universal connector comprising a body portion having provision for connection to a cable and having one end portion provided with two opposed and spaced fingers having adjacent faces parallel to one another, the thickness of the body portion measured in a direction parallel to the inner and adjacent surfaces of the fingers for a distance at least equal to the length of the fingers being substantially equal to the distance between the fingers whereby to permit the fingers of an identical connector to straddle such a portion in tightly fitting and sliding engagement to thereby provide an efficient electrical connection.

3. A universal connector comprising a body portion of spring metal having provision for connection to a cable having one end thereof provided with two opposed and spaced fingers having adjacent faces parallel to one another, the body portion in the rear of the slot and for a distance at least equal to the length of the fingers having two parallel surfaces spaced apart a distance substantially equal to the distance between the fingers and the resiliency in the fingers being such as to permit the fingers of an identical connector to straddle such a portion in tightly fitting and sliding engagement to provide an efficient electrical connection.

4. A universal connector having a body portion comprising a metal rod provided at one end with a socket for the reception of a cable and provided at the other end with a longitudinally extended slot forming two opposed and spaced fingers, the thickness of the intermediate portion of the body portion to the rear of said slot and for a distance at least equal to the length of the fingers being reduced to a thickness substantially equal to the distance between the fingers whereby to permit the fingers of an identical connector to straddle such intermediate portion in tightly fitting and sliding engagement to thereby provide an efficient electrical connection.

5. A universal connector having a body portion comprising a metal rod provided at one end with a socket for the reception of a cable and provided at the other end with a longitudinally extended slot forming two opposed and spaced fingers, the intermediate portion of the body portion to the rear of the slot and for a distance at least equal to the length of the fingers, and also the fingers being flattened to provide a thickness of said intermediate portion of the body portion substantially equal to the distance between the fingers whereby to permit the fingers of an identical connector to straddle such intermediate portion in tightly fitting and sliding engagement to thereby provide an efficient electrical connection.

6. A universal connector comprising a body portion having provision for connection to a cable and having one end portion provided with a longitudinally extended slot forming two opposed and spaced fingers, the intermediate portion of

the body portion being provided with two opposed grooves extending from the bottom of the slot rearwardly on each side of the body portion for at least a distance equal to the length of the fingers and of a size such as to receive the fingers of an identical connector, the thickness of the body portion measured between the bottoms of said grooves being substantially equal to the distance between the fingers whereby to permit the fingers of an identical connector to straddle such intermediate portion in tightly fitting and sliding engagement to thereby provide an efficient electrical connection.

7. A universal connector comprising a body portion having provision for connection to a cable provided at one end with two opposed and spaced fingers projecting beyond the body portion, that part of the body portion in the rear of the fingers being shaped to correspond to the adjacent faces of the projecting portions of the fingers for a distance at least equal to the length of the fingers and being of a thickness substantially equal to the distance between the projecting portions of the fingers whereby to permit the fingers of an identical connector to straddle such

part of the body portion in tightly fitting and sliding engagement for the full length of the fingers to thereby provide an efficient electrical connection.

8. A universal connector comprising a body portion having provision for connection to a cable provided at one end with two opposed and spaced fingers projecting beyond the body portion, that part of the body portion in the rear of the fingers being shaped to correspond to the adjacent faces of the projecting portions of the fingers for a distance at least equal to the length of the fingers and being of a thickness substantially equal to the distance between the projecting portions of the fingers whereby to permit the fingers of an identical connector to straddle such part of the body portion in tightly fitting and sliding engagement for the full length of the fingers to thereby provide an efficient electrical connection, the forward end of the said part of the body portion of one connector being adapted to engage with the corresponding end of the said part of the body of an identical connector when the connection is made.

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