March 15, 1955 V. R. HERTERICK 2,704,356

ELECTRICAL CONNECTOR

Filed Jan. 13, 1951

Fig. 1.

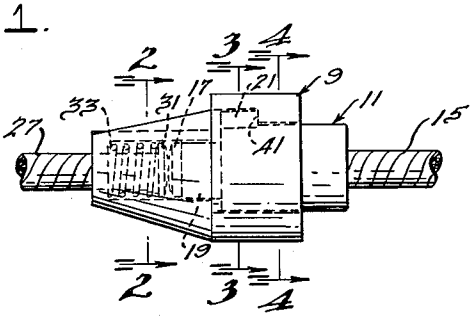


Fig. 2.

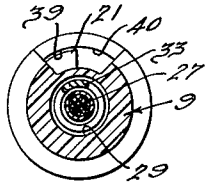


Fig. 3.

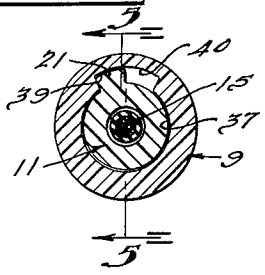


Fig. 4.

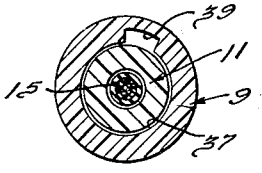
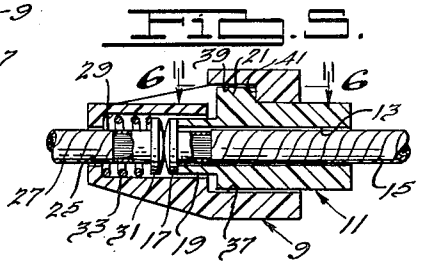


Fig. 5.



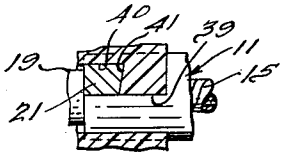


Fig. 6.

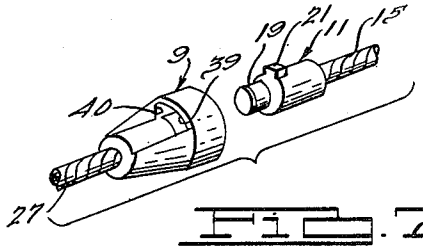


Fig. 7.

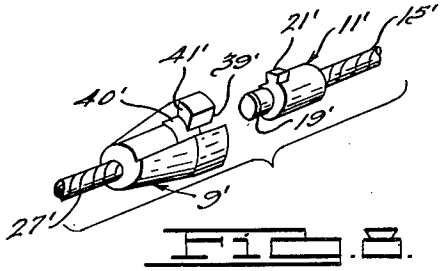


Fig. 8.

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ELECTRICAL CONNECTOR

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3 Claims. (Cl. 339—188)

This invention relates generally to electrical connectors, and more particularly to electrical connectors of the type which permit a pair of electrical wires to be quickly and easily connected or disconnected.

Electrical connectors, of course, have many uses, such as in the manufacture of automotive vehicles and the like, wherein a large number of electrical wires are carried by the body assemblies and have to be connected with corresponding wires on the body assemblies. One particular use of the connectors of this invention is in quickly and easily connecting corresponding wires of the body and chassis frame assemblies together, and thereby saving time and labor in the production of the vehicles.

It is, therefore, an object of this invention to provide a two-piece electrical connector which is relatively inexpensive to manufacture, durable in use, and in which two parts may be easily connected or disconnected.

It is a still further object of this invention to provide an electrical connector of the aforementioned type which is constructed and arranged so that it cannot become accidentally disconnected, after having been once connected, but may be easily disconnected when desired.

These and other objects of this invention will become apparent from the following detailed description, taken in conjunction with the accompanying drawing, in which:

Figure 1 is a side elevational view of a connector of this invention;

Fig. 2 is a sectional view of the structure illustrated in Fig. 1, taken along the line **2—2** thereof;

Fig. 3 is a sectional view of the structure illustrated in Fig. 1, taken along the line **3—3** thereof;

Fig. 4 is a sectional view of the structure illustrated in Fig. 2, taken along the line **4—4** thereof;

Fig. 5 is a sectional view of the structure illustrated in Fig. 3, taken along the line **5—5** thereof;

Fig. 6 is a sectional view of the structure illustrated in Fig. 5, taken along the line **6—6** thereof;

Fig. 7 is an exploded perspective view of the connector element illustrated in Figs. 1–6; and

Fig. 8 is an exploded perspective view of a further embodiment of this invention.

Referring now to the drawing, and more particularly to Figs. 1–7 inclusive, it will be seen that the connector of this invention comprises two interfitting parts **9** and **11**, the first of which may be termed a female or outer part and a second of which a male or inner part. The male part **11** is substantially cylindrical in form and is provided with a central aperture **13** therethrough, through which one end of a wire **15** is extended. A contact or terminal element **17** is connected to the inner end of the wire **15** so that the head thereof normally abuts against the inner end of the part **11**. A rectangular projection **21** extends radially outwardly from the outer periphery of the part **11**, adjacent the reduced end pilot portion **19**. The part **11** is preferably made of plastic, or the like, and the projection **21** is preferably formed integrally with the main body portion.

The part **9** is longitudinally apertured at **25** and one end of a wire **27** extends through the wire inlet aperture **25** and into a contact receiving recess **29** formed immediately inwardly of the aperture **25**. A contact or terminal element **31** is connected to the inner end of the wire **27** and the head portion thereof is slidably disposed in recess **29**. A coil spring **33** is disposed between the head of the terminal element **31** and the end wall of the recess **29**, i. e., the radial shoulder adjacent the aperture

25. Inwardly of the recess **29**, an enlarged, generally cylindrical recess **37** is provided. The wall of recess **37** for receiving part **11** is formed with a longitudinally extending rectangular-like slot **39**, and a circumferential, laterally extending notch or cut out portion **40**, which is connected with slot **39**, rearwardly or outwardly of the inner end of the part **11**, to provide a rearwardly facing radial shoulder **41** circumferentially adjacent the slot which is on a larger diameter than any portion of the part **9** in line therewith. In order to assemble the parts **9** and **11**, the inner end of the part **11** is inserted into the inner end of the part **9**, so that the projection **21** on the part **11** is slidably disposed in the slot **39** of the female part. The diameter of the recess **37** is such as to slidably receive the main body portion of the part **11**, and the diameter of the recess **29** is such as to slidably receive the reduced end pilot portion **19** of the part **11**. Therefore, by axially moving the part **11** into the part **9**, the terminal elements **17** and **31** engage each other and the spring **33** is compressed, to permit the projection **21** on the part **11** to move past the shoulder **41** adjacent to the slot **39**. By then twisting the parts relative to each other, the projection **21** will engage the rearwardly facing shoulder **41** and the spring **33** will resiliently retain the parts in the assembled locked relationship against accidental displacement. It will thus be seen that the projection **21** on the part **11** and the slot **39** and shoulder **41** on the part **9** form a bayonet joint, by means of which the parts are secured in their connected position, and by means of which the parts may be easily disconnected.

In the embodiment illustrated in Fig. 8 the parts are substantially identical to those previously described, except that the slot **39′**, corresponding to the slot **39** of the previous embodiment, is cut radially through the wall of recess **37′** of the part **9′**, as is the lateral cut out portion **40′** which provides the shoulder **41′**. Thus, in this embodiment the projection **21** is not covered by the periphery of part **9**, as in the previous embodiment, but the male and female portions are connected together through a bayonet joint, in the same manner as previously described.

What is claimed is:

1. An electrical connector for releasably holding the radially enlarged end contacts of first and second wires in electrical connection with each other and in axial alignment with each other comprising a unitary outer body formed of plastic and a unitary inner body formed of plastic, said outer body having an aperture extending therethrough, said aperture comprising a wire inlet portion opening out of a first end of said outer body, said inlet portion receiving said first wire, said aperture being radially enlarged next to said inlet portion to provide a contact receiving portion that receives said first wire contact, said outer body aperture having an inner body receiving portion opening out of a second end of said outer body opposite to said first end, said inner body being slidably fitted in said inner body receiving portion and having an aperture coaxial with and opening into the first body aperture through which said second wire extends, the contact of said second wire being on the inside end of said inner body aperture and in electrical connection with the contact of said first wire, said first body having a longitudinal slot formed in the wall thereof and extending lengthwise of said inner body receiving portion parallel to the axis of said apertures and opening radially inwardly into said inner body receiving portion and also opening out of said second end of said outer body, said inner body having an outwardly extending radial projection slidable in said slot, a shoulder on said outer body extending radially from said outer body aperture and of substantially the same radius as said projection, said outer body having formed therein a circumferential slot having one side defined by said radial shoulder and opening into said longitudinal slot and receiving said radial projection so that upon rotation of said inner member said projection may be aligned with said shoulder, said shoulder facing the first end of the outer body and being on a larger diameter than any part of said outer body in line therewith between it and

the first end, and a spring compressed between one of said contacts and the body which carries it and acting to urge said contacts toward each other and said projection against said shoulder.

2. The invention set forth in claim 1 wherein the inner body is provided with a pilot end slidably fitting in the contact receiving portion of the outer body aperture and wherein said spring is confined in said contact receiving portion between said first wire contact and a radial shoulder separating said inlet portion from said contact receiving portion.

3. In an electrical connection, an outer single piece body of insulating material and an inner single piece body of insulating material, said bodies having coaxial apertures extending therethrough, electrical wires in the respective apertures having confronting end contacts, a portion of the outer body aperture receiving said inner body, said inner body being disposed in a radially enlarged portion of the outer body and axially movable in said aperture relative to the outer body, said inner body having an integral radially outwardly extending locking projection, said outer body enlarged portion having a longitudinally extending slot with a circumferential locking shoulder angularly spaced from and communicating with the slot that operatively receives said projection, spring means acting between a contact and a wall of a body to urge said contacts into electrical connection and to press said projection against said shoulder, said slot, projection, and shoulder being on a larger radius than any part of said outer body in line therewith.

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