Nov. 26, 1957 W. P. HERMAN ET AL 2,814,789

FEMALE CONNECTOR

Filed Oct. 4, 1955

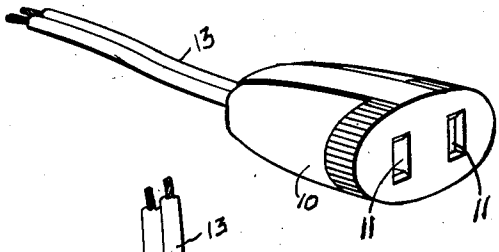


FIG. 1

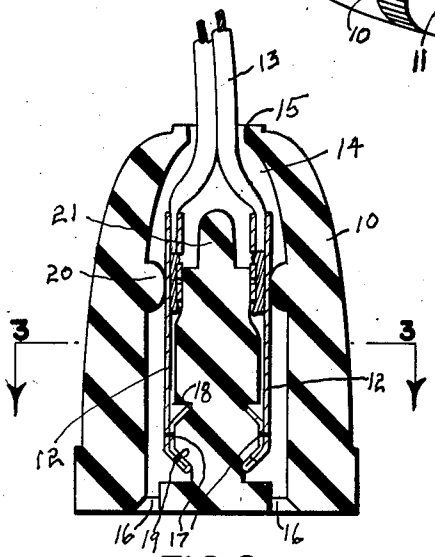


FIG. 2

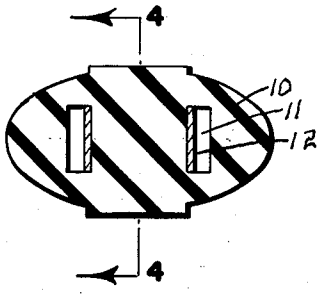


FIG. 3

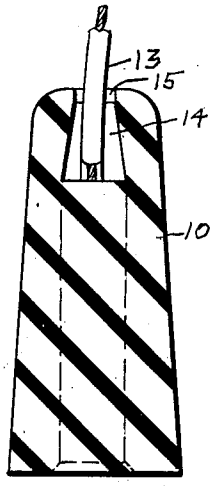


FIG. 4

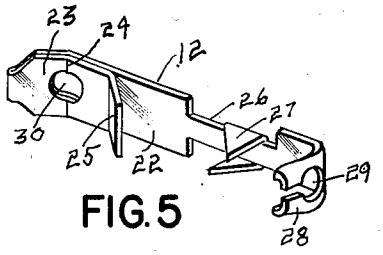


FIG. 5

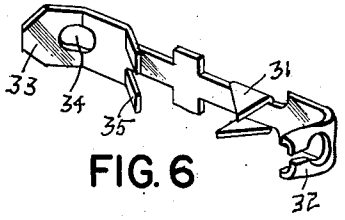


FIG. 6

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United States Patent Office 2,814,789 Patented Nov. 26, 1957

2,814,789

FEMALE CONNECTOR

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Application October 4, 1955, Serial No. 538,327

1 Claim. (Cl. 339—191)

Our present invention relates to the electrical plug art and more particularly to a novel construction of a female connector.

The principal object of the present invention is to provide a novel female connector having a novel crimped on contact blade.

A further object of the present invention is to provide a female connector having a positive anchoring means in the plug husk for the contact blades.

Another object of the present invention is to provide a female connector in which the contact blades are held in parallel alignment.

A further object of the present invention is to provide a female connector which is simple in construction and easy and economical to manufacture and assemble.

With the above and other objects and advantageous features in view, our invention consists of a novel arrangement of parts, more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more particularly defined in the appended claim.

In the drawings:

Fig. 1 is a perspective view of a female connector embodying our invention.

Fig. 2 is an enlarged vertical section thereof.

Fig. 3 is a section taken on line 3—3 on Fig. 2.

Fig. 4 is a section taken on line 4—4 on Fig. 3.

Fig. 5 is a perspective view of the crimped on contact blade.

Fig. 6 is a perspective view of another form of crimped on contact blade.

In the manufacture of female connectors many problems arise due to the differences in construction between the male and female connectors. In the female connector the blade is anchored completely within the husk but room must be left in the slot for inserting the male contact blade. One of the problems is the movement of the female contact blade within the slot preventing the proper insertion of the male contact blade. Furthermore, the female contact blade is short and heretofore the electrical cord connections have been soldered thereto to leave room for anchoring devices. The present invention is designed to overcome these defects by providing a husk construction which permits the use of a novel crimped on blade. Soldering is eliminated and a positive anchoring means provided which prevents movement of the contact blade and ensures a good electrical contact.

Referring more in detail to the drawings, the plug husk **10** is provided with a pair of spaced parallel slots **11** in which the blades **12** are positioned. The electrical cord connection **13** is attached to the blades **12** at their upper ends. The plug husk **10** is generally elliptical in cross section and the spaced parallel slots **11** terminate in an upper chamber **14** having a single cord receiving passageway **15**. Each slot **11** is provided with a restricted slot opening **16** through which the male contact blade is inserted. The main portion of the slot is sufficiently wide to hold the male and female contact blades in tight electrical

contact. Adjacent the lower end of each slot is a three sided portion **17** having an upper undercut portion **18**, the lower portion **19** being slightly spaced from the bottom portion of the slot. Adjacent the upper end of each slot the outer wall portion is provided with a rounded node **20** extending into the slot to form a restricted slot portion. The chamber **14** is provided with a central upwardly extending portion **21** which acts as a separator between the upper ends of both slots.

Now referring to Figs. 2 and 5, each blade **12** comprises an elongated rectangular body portion **22** having its forward end folded over upon itself as at **23** to form a double thickness. The two thicknesses are bent at an angle at **24** and then the free end of the folded portion is bent away from the body portion as at **25**. The rear portion of the blade is provided with a narrow cut out section **26** having integral lugs or tangs **27** extending from each side edge. The rear of the blade is bent at right angles to the body portion **22** to form a pair of spaced ears **28** having a rounded cut out **29** therebetween. The blade is also provided with an assembly opening **30** adjacent its forward end.

In assembly, the bared ends of the electrical cord connection **13** are placed at the upper end of the blade so that they pass between the ears **28** through the cutout portion **29** and lie along the blade between the lugs **27**. A crimping machine is used to flatten the lugs to lock the wire to the blade and to upset the ears and bend them forwardly to lock the wire and the insulation in a strain relief connection. In the assembly machine the cord opening **15** is spread and the pair of blades **12** are pulled into the slots **11** into the position shown in Fig. 2. In this position the nodes **20** push the blades and hold them against inside edges of the slots and the bent end fits over the portions **17** so that the bent portion **25** extends into and under the undercut portion **18** and the bent portion **23** fits into the portion **19**. The blade is thus held in vertical position and its vertical movement is restricted by the bent portions. It will be noted that the resilient body of the plug acts as a spring when the male blade is inserted and presses against the female blade.

In the form shown in Fig.6 the blade is made without a fold and it is customary to use a thicker metal. In this form the rear end of the blade is provided with lugs **31** and ears **32** identical with the blade shown in Fig. 5. The front end of the blade is bent to form the portion **33** having the assembly opening **34**. The intermediate portion of the blade is provided with a pair of struck up lugs **35**, struck one from each side of the blade in parallel relation to form the upper fold portion fitting into the undercut **18**. This replaces the bent portion **25** in the form shown in Fig. 5.

The plug of the present invention is therefore simple in construction and easy to manufacture and assemble. The blades are crimped to the electrical cord connection and the plug husk and blades are so formed as to firmly anchor the blades in proper position. Other advantages of the present invention will be readily apparent to a person skilled in the art.

We claim:

A female connector comprising a one-piece husk of resilient material having an upper cord chamber and a central cord opening communicating with said chamber, said husk having a pair of spaced parallel flat slots extending downwardly there-through from said cord chamber, said slots having restricted slot openings at their lower ends, integral portions extending from the body of said husk into the upper end of each slot to form a restricted slot portion, each slot having spaced undercut portions in one wall thereof, a female blade anchored in each slot, and an electrical cord in said chamber having a crimped connection to the upper end of each blade,

each of said female blades comprising a generally rectangular flat metal strip having a main body portion folded upon itself to form a double thickness and a cord connecting portion, the folded end of said body portion being bent at an angle and the free end of said folded portion being bent at an opposite angle, said bent portions extending into said undercut portions, said cord connecting portion having integral lugs for engaging the bare conductor and integral ears for engaging the insulation to form a strain relief connection.

References Cited in the file of this patent

UNITED STATES PATENTS

2,169,219	Brownstein	Aug. 15, 1939
2,260,323	Judisch et al.	Oct. 28, 1941
2,283,807	Herman	May 19, 1942
2,318,485	Herman	May 4, 1943
2,476,738	Klump	July 19,1949