

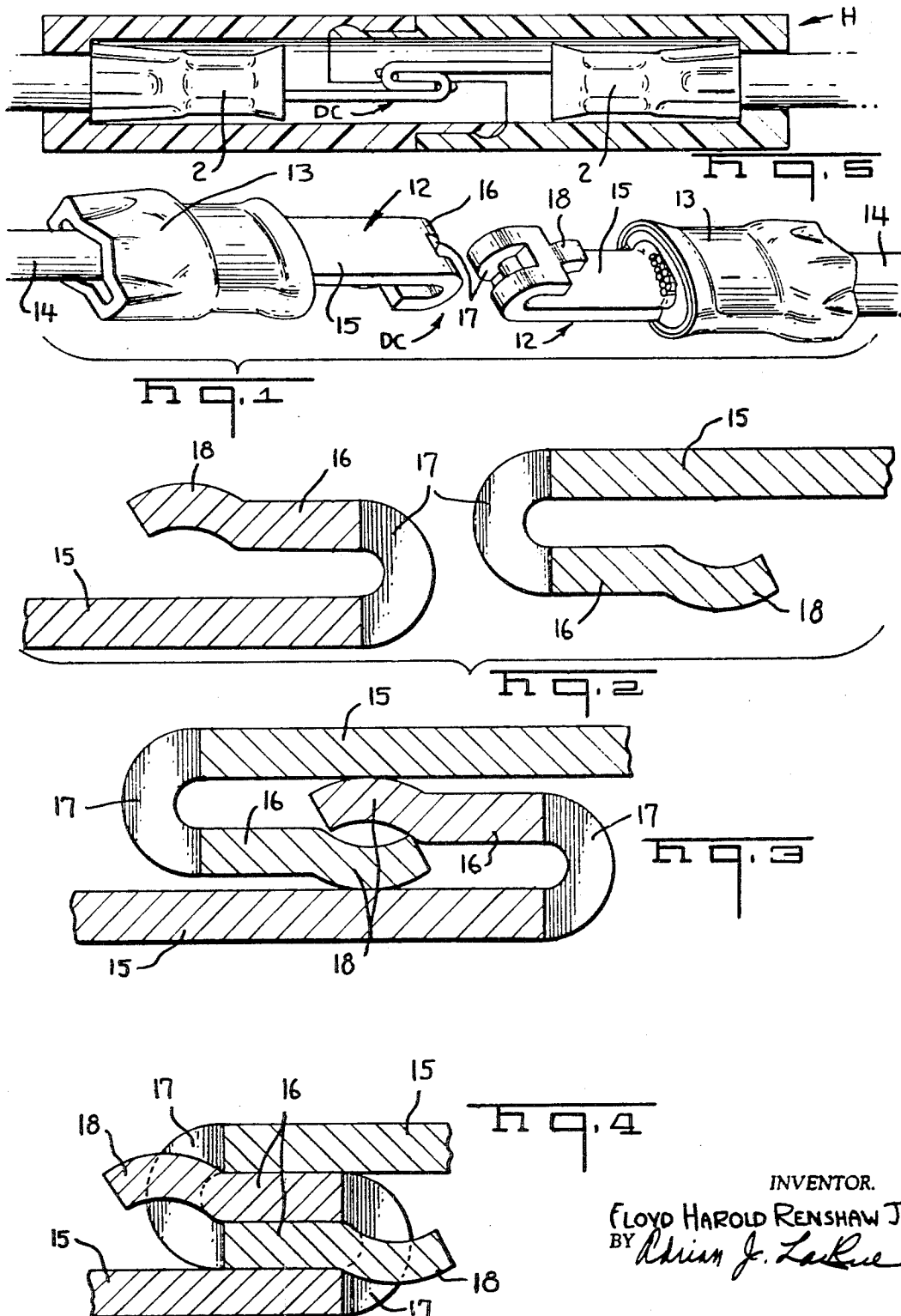
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ELECTRICAL CONNECTOR AND INSULATION HOUSING THEREFOR

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ELECTRICAL CONNECTOR AND INSULATION HOUSING THEREFOR

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Original application Oct. 6, 1965, Ser. No. 493,380, now Patent No. 3,373,397, dated Mar. 12, 1968. Divided and this application Jan. 17, 1968, Ser. No. 698,528

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5 Claims

ABSTRACT OF THE DISCLOSURE

An insulation housing having identical parts each provided with an arcuate shaped recess along an interior surface of one end and an arcuate shaped extensions extending outwardly from this one end. The extensions mate with the excesses when the housing parts are interconnected and means are located in the recesses and on the extensions to latch the parts together to surround and insulate an electrical connection within the housing.

CROSS-REFERENCE AND RELATED APPLICATION

This is a division of application Ser. No. 493,380, filed Oct. 6, 1965, now U.S. Patent No. 3,373,397.

This invention relates to an electrical connector of the disconnect type and an insulation housing therefor.

In the field of disconnect connectors of the type disclosed in U.S. Patent No. 2,478,143, these connectors have been or can be insulated by pulling a tube of flexible material over the connection, wrapping insulation tape over the connection, placing a shrinkable plastic member over the connection and shrinking it in place thereon or insulation may be applied to the connection in the form of flowable or sprayable dielectric material. As can be discerned, it is difficult to apply the foregoing types of insulation to the connection; and, once these types of insulation have been applied to the connection, the insulation has to be destroyed in order to disconnect the connection or it is difficult to remove the tube of flexible material from the connection as well as reapply it thereover. If the insulation has to be destroyed in order to disconnect the connection, then insulation will have to be reapplied to the connection when it is reconnected.

It is therefore a primary object of the invention to provide an insulation housing that obviates the disadvantages of the conventional types of insulation to be applied to a disconnect connection or the like.

Another object of the invention is to provide an insulation housing for an electrical connection that is easily applied thereto and permits ready access to the connection.

A further object of the invention is the provision of an insulation housing that is simple in construction and economical to manufacture.

An additional object of the invention is to provide a disconnect connector that can be used in conjunction with the insulation housing.

Other objects and attainments of the present invention will become apparent to those skilled in the art upon a reading of the following detailed description when taken in conjunction with the drawings in which there are shown and described illustrative embodiments of the invention; it is to be understood, however, that these embodiments are not intended to be exhaustive nor limiting of the invention but are given for purposes of illustration in order that others skilled in the art may fully understand the invention and the principles thereof and the manner of

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applying it in practical use so that they may modify it in various forms, each as may be best suited to the conditions of a particular use.

The foregoing objects are achieved by means of an insulation housing having identical parts each provided with an arcuate-shaped recess in one end and an arcuate-shaped extension extending outwardly from the one end, the extensions mating with the recesses, and means are located in the recesses and on the extensions to latch the parts together to surround and insulate an electrical connection. The disconnect connector comprises identical or hermaphroditic parts, each part including a U-shaped section having an arcuate opening at the bight thereof and a detent-latching member at the end of the free leg, the free legs being disposable within the U-shaped sections and the detent-latching members being matable with the arcuate openings to latch the parts together. The above-mentioned housing is, of course, usable on the foregoing disconnect connector.

In the drawings:

FIGURE 1 is a perspective exploded view of a disconnect connector;

FIGURES 2 through 4 are fragmentary cross-sectional views illustrating the engagement of the connector members of the disconnect connector; and

FIGURE 5 is a side elevational view illustrating the disconnect connector in a connected position and a cross-sectional view of a housing member illustrating the housing member in an engaged position surrounding the connector.

Turning now to FIGURES 1 through 5, there is illustrated an improved disconnect connector DC which comprises matable connector elements 12 which are identical in configuration. Each of connector elements 12 comprises a ferrule section 13 which is crimpable onto the conductive portion and insulation of conductor means 14. A blade section 15 extends outwardly from ferrule section 13 which is bent back upon itself to form a clip 16. A U-shaped opening 17 is disposed in clip 16 at the bight thereof. A detent 18 is located on the free leg of clip 16 and extends outwardly therefrom toward ferrule section 13. Detent 18 is arcuate-shaped in cross section as illustrated in FIGURES 2 through 4.

Connector elements 12 are susceptible to mass production by automatic machinery and are conveniently formed by shaping a sheet metal blank or strip of a suitable electrically conductive material such as brass, bronze, or the like in successive forming steps. The metal is sufficiently hard and resilient to impart to the connection area, a spring-like character, yet is sufficiently malleable to permit cold forging or crimping of the conductor-receiving area onto a conductor to provide an excellent and mechanical connection.

In operation, the free ends of clips 16 of connector elements 12 are disposed opposite respective blade sections 15. Opposite forces are then exerted on connector elements 12 causing the free legs of clips 16 to move along clips 16 so that detents 18 enter U-shaped openings 17. The ends of the free ends of clip 16 on each side of detent 18 can engage the bight of clip 16 upon each side of U-shaped openings 17 thereby limiting the movement of the free legs of clip 16 therewithin. When the ends of the free legs of clip 16 reach the innermost position within clip 16, detents 18 are springingly disposed within U-shaped openings 17 as illustrated in FIGURE 4 in such a manner so as to latch connector elements 12 together.

The connector elements are latched in a secure position by means of detents 18 disposed within U-shaped opening 17 because of the arcuate configuration of detents 18 and the spring characteristics thereof so that sizeable forces are needed to move the connector elements out of

the connected position which is greater than the forces necessary to connect the connector elements.

The free leg of one of the connector elements is frictionally positioned within the clip section of the other of the connector elements and vice versa due to the resilient characteristic of the clip sections thereby enhancing the electrical connection between the connector elements. Thus, the latching means defined by detents 18 within their respective U-shaped openings 17 in addition to the spring engagement of the clip sections onto the free legs thereof provides an excellent electrical and mechanical connection.

In order to insulate disconnect connector DC, insulative housing member H, as disclosed in U.S. Patent No. 3,373,397, is used as illustrated in FIGURE 5 to insulate the connector and to allow the connector to be readily disconnected when desired.

It will, therefore, be appreciated that the aforementioned and other desirable objects have been achieved; however, it should be emphasized that the particular embodiments of the invention, which are shown and described herein, are intended as merely illustrative and not as restrictive of the invention.

What is claimed is:

1. An electrical connector comprising complementary connector elements each including a blade section and a clip section integral with said blade section, said clip section having a bight and a free leg extending outwardly therefrom, said bight having a U-shaped opening therein, an arcuate-shaped detent extending outwardly from the end of said free leg, the free legs of the connector elements being disposable within the clip sections with the arcuate-shaped detents being latchably positionable within the U-shaped openings to maintain the connector elements in a connected condition.

2. An electrical connector according to claim 1 wherein

said clip sections of the connector elements springingly engage the free legs of the connector elements.

3. An electrical connector according to claim 1 wherein the arcuate-shaped detents are arcuate shaped in a direction away from the blade sections.

4. A connector member comprising a blade section, a clip section integral with said blade section and including a leg that is an extension of said blade section and a free leg substantially parallel to said first-mentioned leg, a bight between said legs and including an opening therein, and a detent at the outer end of said free leg for engagement with a corresponding opening of a like mating contact member with the free leg springingly engaged by the clip section thereof.

5. A connector member mateable with a like contact member comprising a blade section having a part bent back across said blade section and defining a clip section, said part having an arcuate-shaped detent extending outwardly from a free end thereof, said clip section having an opening therein to receive the detent of the like contact member, said clip section having spring characteristics to springingly engage the part of the like contact member.

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