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J. M. WHITE
ELECTRICAL CONNECTOR
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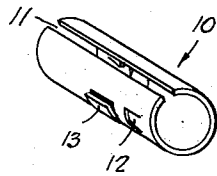


Fig. 2

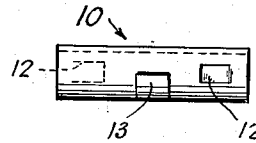


Fig. 1

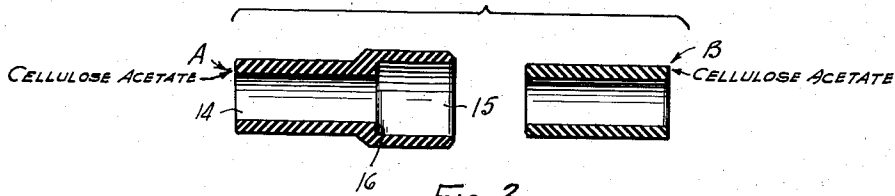


Fig. 3

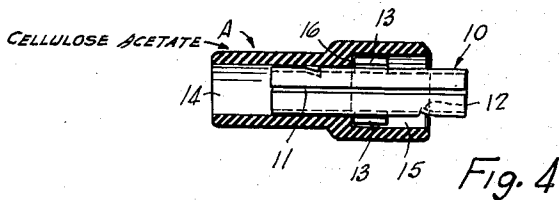


Fig. 4

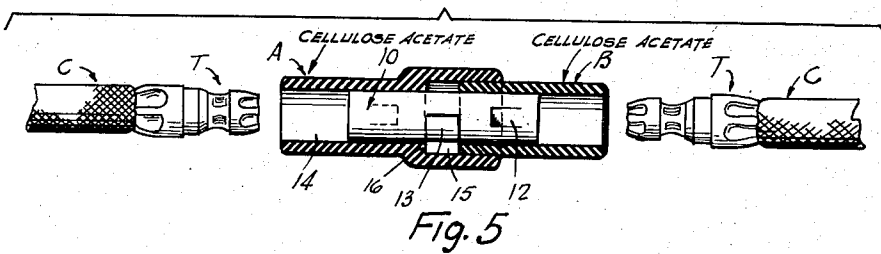


Fig. 5

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ELECTRICAL CONNECTOR

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4 Claims. (Cl. 173—328)

This invention relates to connectors such as are commonly employed at various places in a motor vehicle for effecting detachable connections between electrical conductors.

The modern motor vehicle includes many electrical circuits that are defined by insulated conductors. It has been found necessary to provide for detachable connections in such circuits, and to this end connectors have been provided. In accordance with conventional practice in this field the insulated conductors are provided with terminal tips, and it is these tips which are detachably received in the connector. An electrical connector of the type with which this invention is concerned ordinarily includes an outer casing of insulating material, and an inner sleeve of conducting material into which the terminals on the conductors fit.

The present invention has in view, as an important object, the provision of a connector of the character above noted in which the inner conducting sleeve is assembled with the outer insulating casing in a novel, and what is believed to be highly improved, manner.

More in detail this invention has, as an object, the provision of a connector of the character above noted in which the outer sleeve is rendered of a two part construction. With this arrangement the inner conducting sleeve is first assembled with one part of the outer insulating sleeve, after which the other part of the outer insulating sleeve is assembled therewith to complete the assembly.

In providing a connector in accordance with the above noted objectives it becomes necessary to impart permanence to the construction of the outer sleeve after the above outlined assembling operations have been completed.

Accordingly, a further object of the invention is the provision of a connector of the character above noted in which the outer insulating sleeve is formed with a material which readily lends itself to fusion operations, whereby the two parts of said outer sleeve may be fused together after assembly of the inner conducting sleeve therewithin to provide a permanently assembled connector.

In carrying out this idea in a practical embodiment the invention contemplates the use of a cellulose acetate as the material from which the outer sleeve is made. By subjecting the parts of the outer sleeve to an appropriate fusing material, such as acetone, the two parts may be fused together.

Another object of the invention is the provi-

sion of a connector of the character above noted in which the outer insulating sleeve consists of two parts, one of which is formed with a bore that is enlarged at one end to provide an internal shoulder. The inner conducting sleeve is formed with abutment means for engaging said shoulder, while the other part of said outer insulating sleeve fits in said enlarged bore with the inner end thereof engaging said abutment means on the inner conducting sleeve.

With a connector designed in accordance with the above noted precepts the inner conducting sleeve may take the usual split sleeve form, and there is no expansion or contraction necessary as an incident to assembly of the inner conducting sleeve with the outer conducting sleeve. As a result, the exact amount of resiliency which is desired on the part of the inner sleeve may be imparted thereto at the time of assembly, and this factor will in no way be impaired by the assembly operations. Thus assurance is had that the terminal on a conductor will be gripped in an accurately predetermined manner.

Various other more detailed objects and advantages of the invention will in part become apparent, and in part be hereinafter stated, as the description of the invention proceeds.

The invention, therefore, comprises an electrical connector consisting of an outer insulating sleeve and an inner conducting sleeve. The outer sleeve is of a two part construction, one part having a bore that is enlarged to provide an intermediate shoulder. The inner conducting sleeve is split and formed with abutment means engaging said shoulder. The other part of the outer sleeve is positioned in the enlarged bore with an end engaging the abutment means. The outer insulating sleeve is made from a material such as a cellulose acetate, which provides for the fusion of the two parts together to render the assembly permanent.

For a full and more complete understanding of the invention reference may be had to the following description and accompanying drawing, wherein

Figure 1 is a detailed view of the inner conducting sleeve per se,

Figure 2 is a view in perspective of the sleeve shown in Figure 1,

Figure 3 is a sectional view showing the two parts of the outer insulating sleeve in exploded relation,

Figure 4 is a sectional view showing one part of the outer sleeve with the inner conducting

sleeve assembled therewith as the first step in the assembly operation, and

Figure 5 is a section through the completely assembled connector and developing the relation with conductors having terminals which are to be inserted therein.

Referring now to the drawing, wherein like reference characters denote corresponding parts, and first more particularly to Figure 1, the inner conducting sleeve is shown as being made from bronze, copper or other appropriate conducting material. The sleeve is of substantially cylindrical formation, and is identified by the reference character 10. It will be noted that the sleeve 10 is formed with a split at 11 that extends lengthwise thereof, and which imparts a certain amount of resiliency to the sleeve, this for a purpose to be hereinafter pointed out. Due to this split construction the sleeve 10 may be made from sheet metal by stamping operations.

The sleeve 10 is formed with inwardly extending projections or protuberances at 12 which are designed to engage with terminals, as will be later pointed out. Struck from the sleeve 10 are a pair of tongue-like projections 13 which are deformed so that they constitute outward protuberances, these protuberances being intended to constitute abutment means, as will be later pointed out.

Referring now to Figure 3, the outer insulating sleeve is shown as comprising the parts A and B. The part A is formed with a bore at 14 that is enlarged, as shown at 15, to provide a shoulder 16. Both the parts A and B are preferably made from an insulating material having certain fusion properties so that the two parts may be fused together. The invention has particularly in mind the use of a cellulose acetate which is put into condition for such fusion when subject to the effects of acetone.

The sleeve 10 is first inserted in the part A with the projections 13 engaging the shoulder 16. One end of the part B is then dipped in acetone, after which it is inserted into the enlarged bore 15 until the end thereof engages the abutment means 13. Due to the effect of the acetone the parts A and B are fused together, and the assembly is rendered permanent. The completely assembled connector is shown in Figure 5, and it will be noted that conductors designated C are tipped with terminals T. The noses of the terminals T are designed to be snapped into the inner conducting sleeve 10 with the skirts of the terminals T received in the outer extremities of the insulating sleeve. It will be noted that the projections 12 snap in place back of the enlarged portion of the noses, to establish the detachable connection.

It is notable that not only is a highly simplified construction provided, but the mode of assembling the several parts is also rendered comparatively simple. Moreover, there is nothing in the assembling operations which requires any expansion, contraction or other distortion of the inner conducting sleeve. Thus the split at 11 may be so proportioned as to impart just the required amount of expansion and contraction resiliency

as is desired, and this factor will in no way be disturbed by the assembly operations.

The use of a cellulose acetate as the material from which the outer insulating sleeve is made presents the further advantage of providing a connector that is, for all practical purposes, substantially unbreakable. This material is not brittle and, in fact, is quite flexible. Thus any danger of chipping or breaking the connector is obviated.

While a preferred specific embodiment of the invention is hereinbefore set forth it is to be clearly understood that the invention is not to be limited to the exact constructions illustrated and described, because various modifications of these details may be provided in putting the invention into practice within the purview of the appended claims.

I claim:

1. An electrical connector of the character described comprising an outer insulating sleeve consisting of two parts of a fusible material, one of said parts being formed with a bore that is enlarged to provide a shoulder intermediate the ends thereof, the other of said parts being telescoped in said enlarged bore and fused to said first part, an inner conducting sleeve received in the bore of said first mentioned part and said second mentioned part, and abutment means carried by said inner conducting sleeve and held between said shoulder and the end of said second part.

2. An electrical connector of the character described comprising an outer insulating sleeve consisting of two parts, one of said parts being formed with a bore that is enlarged to provide a shoulder intermediate the extremities thereof, the other part being received in said bore and fused to said first mentioned part with the end of said second mentioned part being spaced from said shoulder, and a split inner conducting sleeve having outwardly extending protuberances interposed between said shoulder and said end of said last mentioned part.

3. An electrical connector of the character described comprising an outer insulating sleeve consisting of two parts of a cellulose acetate, one of said parts having a bore that is enlarged to provide a shoulder intermediate the ends thereof, the other part being positioned in said enlarged bore with an end spaced from said shoulder, said parts being fused together, and a split inner conducting sleeve formed with outwardly extending protuberances that are disposed between said shoulder and said end.

4. An electrical connector of the character described comprising an outer insulating sleeve part formed with bores of different diameter and a shoulder therebetween, an inner conducting sleeve carrying laterally extending abutment means engaging said shoulder, and a second insulating sleeve part received in the larger bore of said first insulated sleeve part with its inner end secured against said abutment means to clamp said abutment means against said shoulder and hold said conducting sleeve in position.

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