United States Patent

Dumeige

[15] **3,681,740**

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[54] **FUSE CONNECTORS**

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[73] Assignee: **AMP Incorporated,** Harrisburg, Pa.

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Related U.S. Application Data

[62] Division of Ser. No. 761,473, Sept. 23, 1968, Pat. No. 3,579,179.

[30] **Foreign Application Priority Data**

Sept. 27, 1967 France.....67122483

[52] **U.S. Cl.**.....**339/151 M,** 337/198, 339/147 P

[51] **Int. Cl.**.....**H01r 23/08**

[58] **Field of Search**.....339/50 R, 52 R, 57, 147 R, 339/147 P, 151, 154 R, 154 L, 176 R, 176 L, 222, 252 F, 258 F, 259 F; 313/51; 337/186, 187, 188, 197, 198, 215, 216

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[57] **ABSTRACT**

A fuse connector has a fuse contact formed from a sheet metal with a body having an apertured extension, a resilient tongue in the aperture engaging an end of a fuse cartridge, side portions along the aperture embracing sides of the cartridge, and a bar joining the side portions serves to limit deflection of the tongue. A housing houses the fuse connectors to provide a connector assembly and it has hinged cover means for access to the fuse; commoning strips may be employed to connect the fuse connectors with other selected connectors of the connector assembly.

2 Claims, 4 Drawing Figures

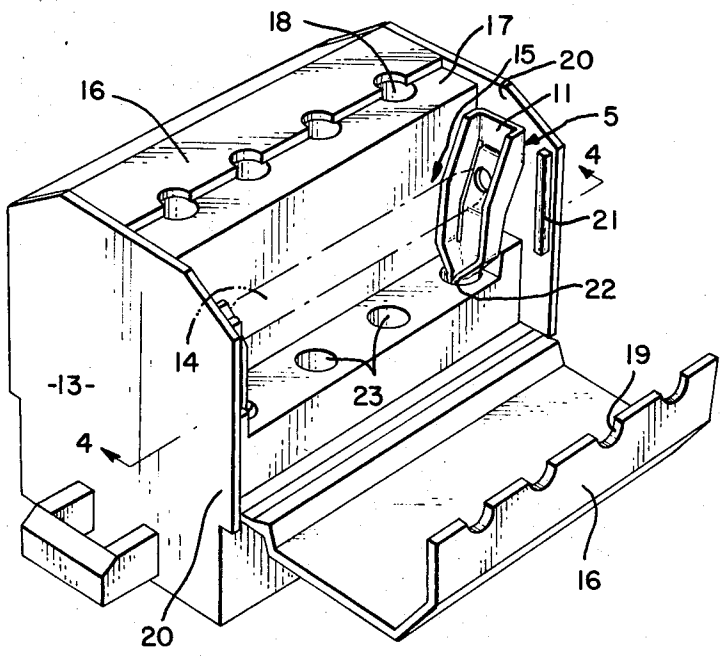


Fig. 1

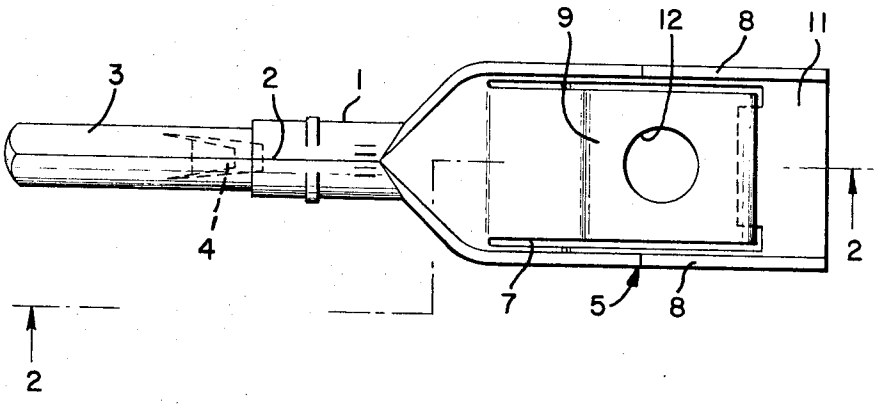
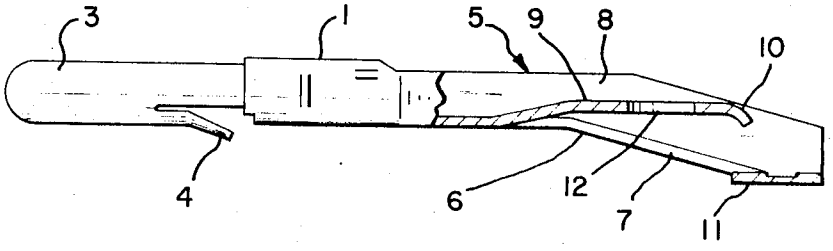


Fig. 2



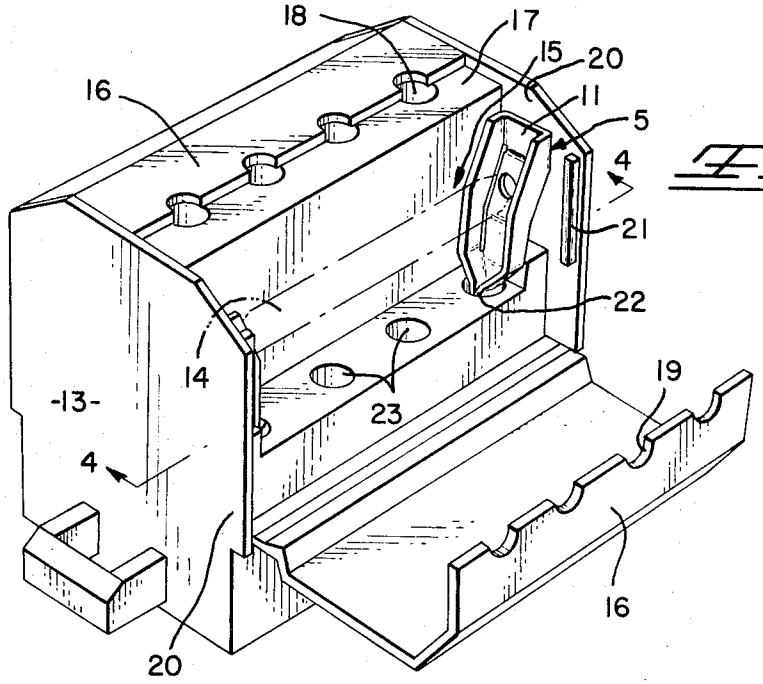

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Fig. 3

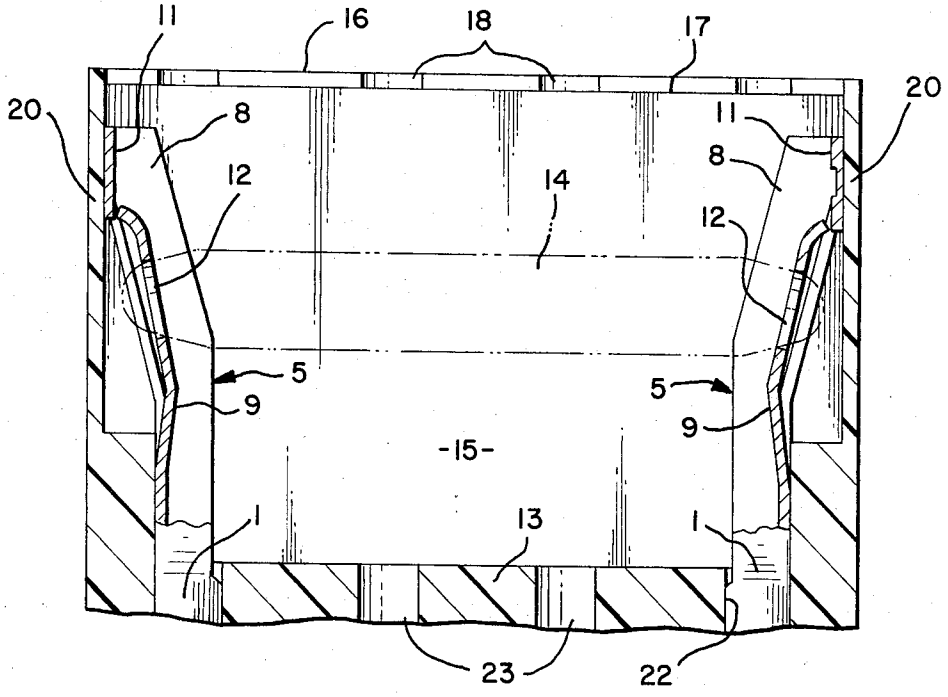

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Fig. 4

FUSE CONNECTORS

This is a division of application Ser. No. 761,473, filed Sept. 23, 1968, and now U.S. Pat. No. 3,579,179.

This invention relates to fuse connectors for cartridge fuses.

Cartridge fuses are generally of two similar types. A first type comprises a cylindrical transparent envelope of glass or other insulator containing internally an axially extending wire filament forming a fuse element. The filament is connected at its ends to metal end caps closing ends of the cylinder. A second type comprises a cylindrical body of ceramic or insulating material carrying an external conductive strip fuse element secured at opposite ends of the body by cap portions integral with the strip.

A fuse connector for a cartridge fuse, according to the present invention, comprises a sheet metal body formed with an aperture defining a pair of side arms between which a resilient tab portion projects, the tab portion being integral with the body at one end and at its free end being arranged to engage an end of the cartridge fuse while sides of the cartridge end are received between the side arms, ends of the side arms being integrally joined by a bar portion extending laterally of the tab portion adjacent its free end and arranged to limit deflection of the tab portion by engagement of the free end therewith.

The body of the connector is suitably formed as a plug or socket for mating with a complementary socket or plug and the plug or socket portion is suitably formed for mounting in a housing passageway. In this way, by engagement of the housing with a complementary housing, the fuse associated with a pair of connectors may be releasably connected into circuitry terminated at the complementary housing.

The invention also includes a fuse connector assembly comprising a pair of fuse connectors mounted in an insulating housing having a cavity confined by a pair of spaced side walls, the bodies of the connectors being mounted in respective passageways leading from the cavity and the apertured portions of the connectors being disposed within the cavity with bar portions of the connectors adjacent respective side walls. In such assembly the housing is suitably formed with a hinged cover for the cavity.

An object of the invention is to provide a fuse connector provided with a fuse-connecting portion having an apertured tab for electrical engagement with a fuse end.

Another object is the provision of a fuse connector having side arms extending along sides of the tab thereby assisting in proper positioning of the end of the fuse into electrical engagement with the tab.

A further object is to provide a fuse connector having a channel-shaped fuse-connecting section which is provided with a base that is inclined rearwardly and outwardly, the base being apertured thereby forming a tab having a section extending substantially parallel with respect to a longitudinal axis of the connector.

An additional object is the provision of a fuse connector wherein the side arms are connected by a bar in alignment with a free end of the tab to prevent the tab from being over stressed.

A still further object is to provide a dielectric housing for the fuse connectors to provide a fuse connector assembly with the housing having integrally formed hinged cover means for covering a cavity in which spaced fused connectors are disposed for electrically connecting with a fuse.

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 is shown and described an illustrative embodiment of the invention; it is to be understood, however, that this embodiment is not intended to be exhaustive nor limiting of the invention but is 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 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 invention will now be described, by way of example, with reference to the accompanying partly diagrammatic drawings, in which:

FIG. 1 is a side view of a fuse connector formed with a plug contact portion;

FIg. 2 is a part sectional side view of the connector of FIG. 1 and taken along line 2—2;

FIG. 3 is a perspective view of a fuse connector assembly embodying a pair of connectors according to FIGS. 1 and 2; and

FIG. 4 is a fragmentary and cross-sectional side view of the assembly of FIG. 3.

The connector of FIGS. 1 and 2 comprises a single piece of sheet metal rolled up from a blank to define a tubular body 1. The body 1 has an open seam 2 and is formed at one end with a plug contact portion 3 having a latching detent 4 for releasably holding the body in a connector passageway of a housing in known manner.

The body 1 at its other end is formed with a cartridge fuse-connecting portion 5 defined by a channel-section tab-like extension of the body 1 of greater width than the body 1. As seen in FIG. 2, the base 6 of the channel-section is inclined rearwardly and outwardly in relation to the length of the plug contact portion 3 and is formed with a rectangular aperture 7 extending through a major proportion of the extension length to define a pair of side arms 8. The side arms are of L-section having side portions perpendicular to the channel base and narrow flange portions generally parallel to the base of the channel section. The flange portions serve to stiffen the side arms 8.

A rectangular tab portion 9 is formed within the aperture 7 with one end of the tab portion integral with the body extension and extending away from the body 1 within the aperture as a cantilever spring. As see in FIG. 2, the tab portion 9 is bent up out of the aperture between the side arms and at its free end is bent over to present an end edge 10 directed towards the base of the channel section.

The arms 8 at their ends remote from the body 1 are integrally joined by a bar portion 11 extending laterally of the arms 8. The bar portion is in alignment with the free end of the tab portion 9 so as to be engaged by the edge 10 and limit movement of the free end. The tab portion is formed with a circular aperture or opening 12 adjacent the free end for embracing the end of a cartridge fuse as illustrated in FIGS. 3 and 4.

The connector of FIGS. 1 and 2 is suitably used in a fuse assembly as shown in FIGS. 3 and 4 in which a pair

of such connectors are mounted in spaced relation in a housing **13** for receiving a cartridge fuse **14**, shown in broken lines, between them. The housing **13** is suitably molded from insulating material and comprises a block formed at opposite sides with cavities **15** closable by hinged covers **16** integrally formed with the block. In FIG. **3**, one of the hinged covers **16** is in closed position while the other is open to reveal one of the cavities **15**. The cavities **15** are separated by a central wall **17** containing a row of four connector receiving passageways **18**, each arranged to receive a plug or socket connector terminating a wire lead. The wire leads, not shown, are arranged to extend from the apertures at the upper ends of passageways **18** and through apertures defined by cooperating recesses **19** in adjacent edges of the hinged cover **16**. The cavities **15** are confined between opposite side walls **20** of the housing which at their outer edges are formed with inwardly directed ribs **21** for releadably retaining the hinged covers in a snap fit.

The fuse connectors are mounted in respective passageways **22**, formed in the floors of the cavities **15** adjacent the side walls **20** with latching detents **4** engaging shoulders (not shown) in passageways **22**. The plug contact portions **3** of the connectors project into a recess formed in the lower side of the housing **13** for receiving a complementary housing (not shown) containing socket connectors for mating engagement with the plug contact portions. The fuse contact portions of the connectors are disposed within the cavity **15** with the bases of the channel-sections facing the adjacent side walls **20** of the housing. The bar portions **11** of the connectors engage the walls **20** to resist outward movement of the upper ends of insertion of the cartridge fuse **14**.

In use, the cartridge fuse **14** is inserted downwardly into the cavity **15** to engage the ends of the fuse cartridge between the spaced bar portions **11** of the connectors. Sides **8** of the channel-section assist in proper positioning of the fuse cartridge which is moved downwards to engage the edges **10** of the tab portions **9**. The tab portions **9** are deflected outwards to admit downward movement of the fuse cartridge until the cartridge ends engage respective apertures **12** which serve to hold the fuse cartridge in position. The outwards deflection of the tab portion **9** of each connector is limited by engagement of the turned end **10** with the bar portion **11** to prevent overstressing of the spring tab portion **9**.

A pair of further connector passageways **23** is formed in the floor of cavity **15**. These passageways may contain further plug connectors, devoid of the fuse contact portions, which may be commoned to respective fuse connectors by commoning conductive strips mounted in the housing. In this way, the fuse **14** may be connected in a plurality of circuits.

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

The invention is claimed in accordance with the following:

1. A fuse connector assembly comprising a pair of fuse connectors and a dielectric housing, said housing having a fuse-receiving cavity therein provided with opposing walls, a plurality of passageways extending from said cavity, said fuse connectors each having engaging sections for electrical engagement with complementary connectors and fuse-connecting sections, said engaging sections being disposed in said passageways and said fuse-connecting sections being disposed in said cavity, said fuse-connecting sections being generally channel-shaped and opening towards the middle of said cavity, a resilient tab member disposed along the base portion of the channel and having a free end overlying a bar member formed at an end of the fuse-connecting section remote from the engaging section and integral with the sidewalls of the channel and disposed adjacent said opposing walls of said cavity, whereby a fuse inserted into said cavity will contact and deflect said resilient tab members and whereby said bar members will limit the outward deflection of said tab members.

2. A fuse connector assembly as claimed in claim **1**, in which the housing is integrally formed with a hinged cover for closing the cavity.

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