United States Patent [19]

Noyes

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[54] **CONNECTOR CONTACT INCLUDING AN ISOLATION RESISTOR**

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[73] Assignee: **General Motors Corporation**, Detroit, Mich.

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[52] **U.S. Cl.** ..... **339/147 R**, 338/220, 339/276 T, 339/278 C

[51] **Int. Cl.** **H01r 11/08**

[58] **Field of Search** ..... 313/136, 137; 315/46, 49, 58; 324/51, 72.5, 149; 339/118, 147, 276, 278 C; 338/204, 220, 221, 229, 248, 273, 271

[56] **References Cited**

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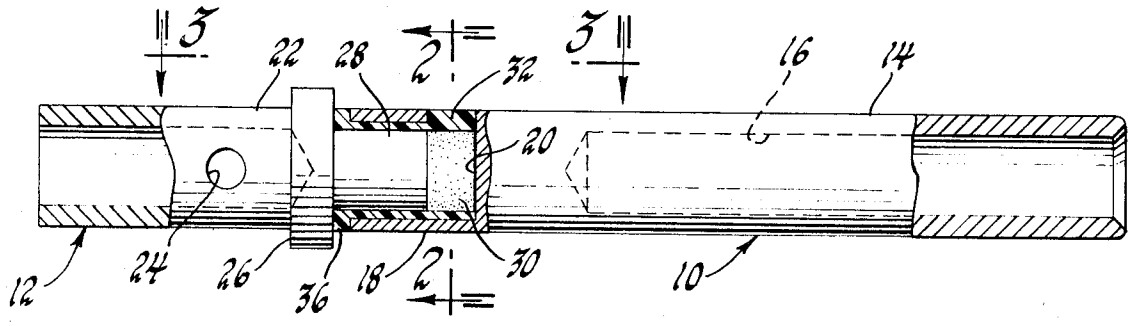
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[57] **ABSTRACT**

A connector contact having two portions which are mechanically connected and electrically isolated one from the other except for an electrical path provided through a resistor which acts as a buffer between an active circuit connected to one portion and a testing device connected to the other portion.

1 Claim, 4 Drawing Figures



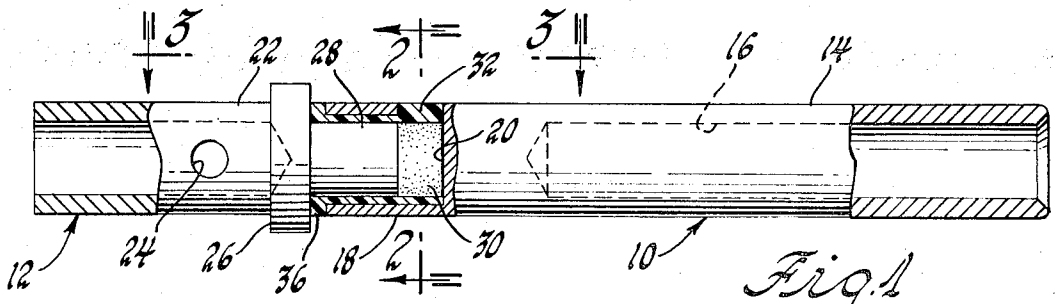


Fig. 1

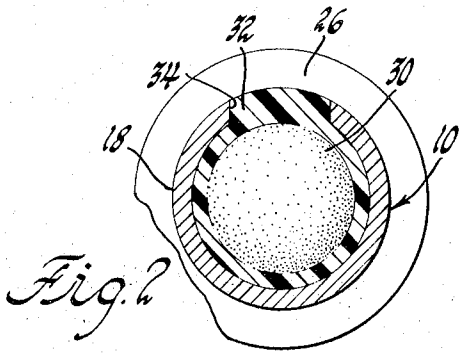


Fig. 2

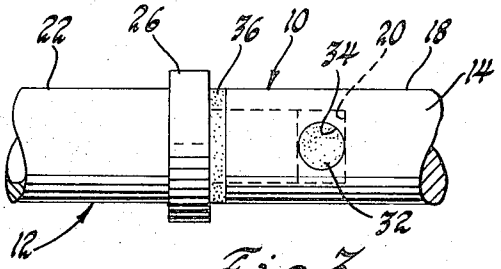


Fig. 3

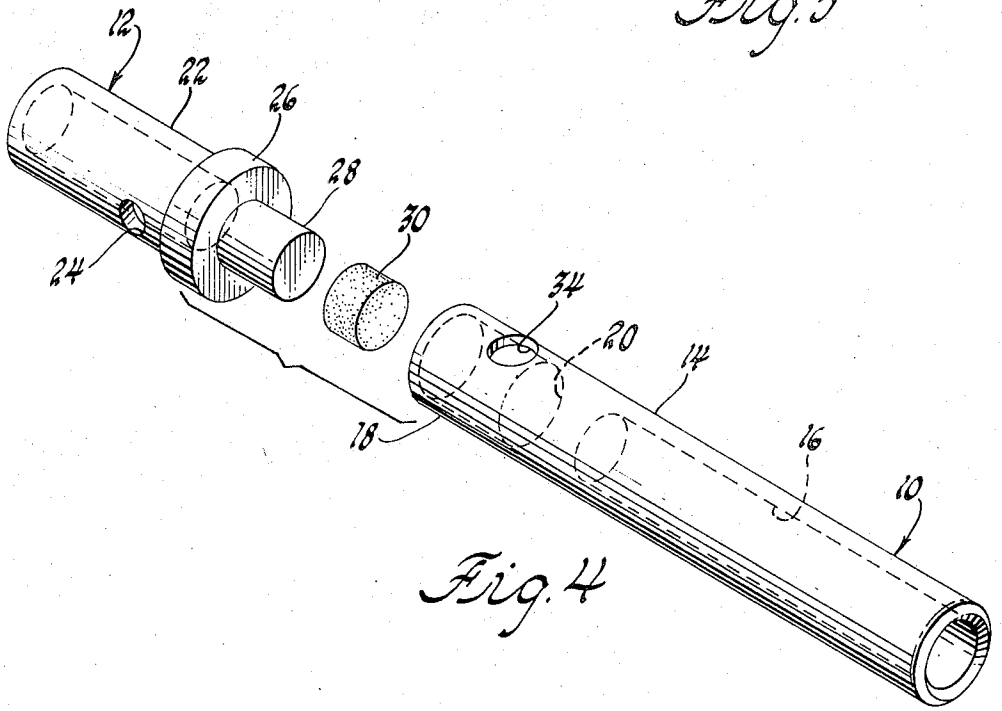


Fig. 4

CONNECTOR CONTACT INCLUDING AN ISOLATION RESISTOR

The invention herein described was made in the course of work under contract or subcontract thereunder with the Department of Defense.

This invention relates to electrical connector contacts and more particularly to a connector contact including an isolation resistor as an integral part of its assembly.

In the design of various functional circuits, which are fabricated into printed circuit boards, test points are often interfaced to external test equipment in order that primary voltages or current can be monitored. These test points may be the outputs of a digital frequency divider or the analog output voltage of an amplifier. In order to prevent degradation of performance of the active circuit and to insure that these test points are not accidently grounded by inadvertently shorting the test point, it is conventional practice to incorporate a series buffer resistor between the test points and the external test equipment. This is usually accomplished by physically placing a resistor of sufficient value on the circuit board and providing printed circuit runs from the point which is to be monitored through one end of the resistor and from the other end of the resistor to the circuit cards motherboard connector. The motherboard connector wire harness then may be interfaced with the necessary test equipment via a test connector contact. Thus the series connection of the buffer resistor between the test point and the test connector contact is accomplished.

Because of the many test points needed for monitoring the electronics associated with large electronic systems a separate circuit board entirely devoted to the buffer resistors is often required which necessitates additional mounting space within the structure carrying the electronic system.

It is an object of the present invention to eliminate the need for such buffer resistor board and the additional mounting space by providing the necessary buffer resistor as an integral part of the connector contact.

Other objects and advantages of the present invention will be more apparent from the following detailed description which should be read in conjunction with the drawings in which:

FIG. 1 shows a partially cut away view of the connector contact of the present invention;

FIG. 2 is a sectional view taken along lines 2—2 of FIG. 1;

FIG. 3 is a top view taken along lines 3—3 of FIG. 1;

FIG. 4 is an exploded view of the connector contact of the present invention.

Referring now to the drawings, where like numerals designate corresponding elements in the various figures, a preferred embodiment of the present invention is shown to comprise an inseparable socket contact including a contact portion **10** and a lead portion **12** for interconnecting a testing device and an active circuit respectively. The contact portion **10** includes a female contact **14** adapted to receive a male contact within the confines indicated in part by the dotted lines **16.** The contact **14** has a bored end portion designated **18** and including a seat **20.** The lead portion **12** includes a lead barrel **22** of outside diameter substantially the same as the outside diameter of the bored end portion **18** for mechanically and electrically attaching an electric lead. The lead barrel **22** includes an opening **24** provided for the purpose of plating the inside of the barrel **22** with a conductive and protective material such as gold. The electrical connection between the lead and the lead barrel **22** is normally obtained by crimping the barrel **22** to the lead. The portion **12** is also provided with a seating and retaining shoulder **26** of greater diameter than the lead barrel **22** and which is adapted to cooperate with suitable tines located in the connector assembly to thereby releasably secure the connector contact in the connector assembly. The portion **12** further includes a stub shaft end portion **28** of diameter less than the internal diameter of the bored end portion **18.** A resistor element **30** is affixed to the stub shaft **28** and the seat **20** by means of a suitable electrically conductive cement or solder. After assembly of the portions **10** and **12,** a flowable dielectric **32** is injected through an opening **34** in the bored end portion **18** to electrically isolate the end portion **18** from the resistor **30** and stub shaft **28** and flows between the bored end portion **18** and the shoulder **26** to form a band **36** electrically isolating the portion **18** and the shoulder **26.** The resistor **30** thus provides the only conductive path between the contact **14** and the lead barrel **22** and serves as a buffer between the active circuit connected to the portion **12** and the testing device connected to the portion **10.**

While the invention has been described with regard to an embodiment including a female contact portion **10** it will be appreciated that a male contact could be employed where such is desirable.

I claim:

1. A connector contact assembly including first and second contact portions for electrically interconnecting first and second external circuits respectively, said first portion having a bored end portion of predetermined external and internal diameter, said second portion having a lead barrel adapted to be connected to an electrical lead and of external diameter substantially corresponding to the external diameter of said bored end portion, said second portion further including a stub shaft end portion of less diameter than the internal diameter of said bored end portion and a shoulder portion of greater diameter than said lead barrel and interposed between said lead barrel and said stub shaft, a resistor element affixed to said stub shaft and the seat of said bored end portion to establish an electrically conductive path between said first and second portions, and a dielectric material electrically isolating the sides of said bored end portion from said stub shaft, said resistors and said shoulder, said bored end portion having an opening in the sides thereof through which said dielectric material may be introduced.

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