

[54] EXPLODING WIRE FUSE COMPONENT

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[22] Filed: June 7, 1972

[21] Appl. No.: 260,493

[30] Foreign Application Priority Data

June 8, 1971 France 71.20630

[52] U.S. Cl. 102/28 EB

[51] Int. Cl. F42b 3/12

[58] Field of Search 102/28 R, 28 EB, 70.2 R

[56] References Cited

UNITED STATES PATENTS

3,117,519 1/1964 Hamilton et al. 102/28 EB

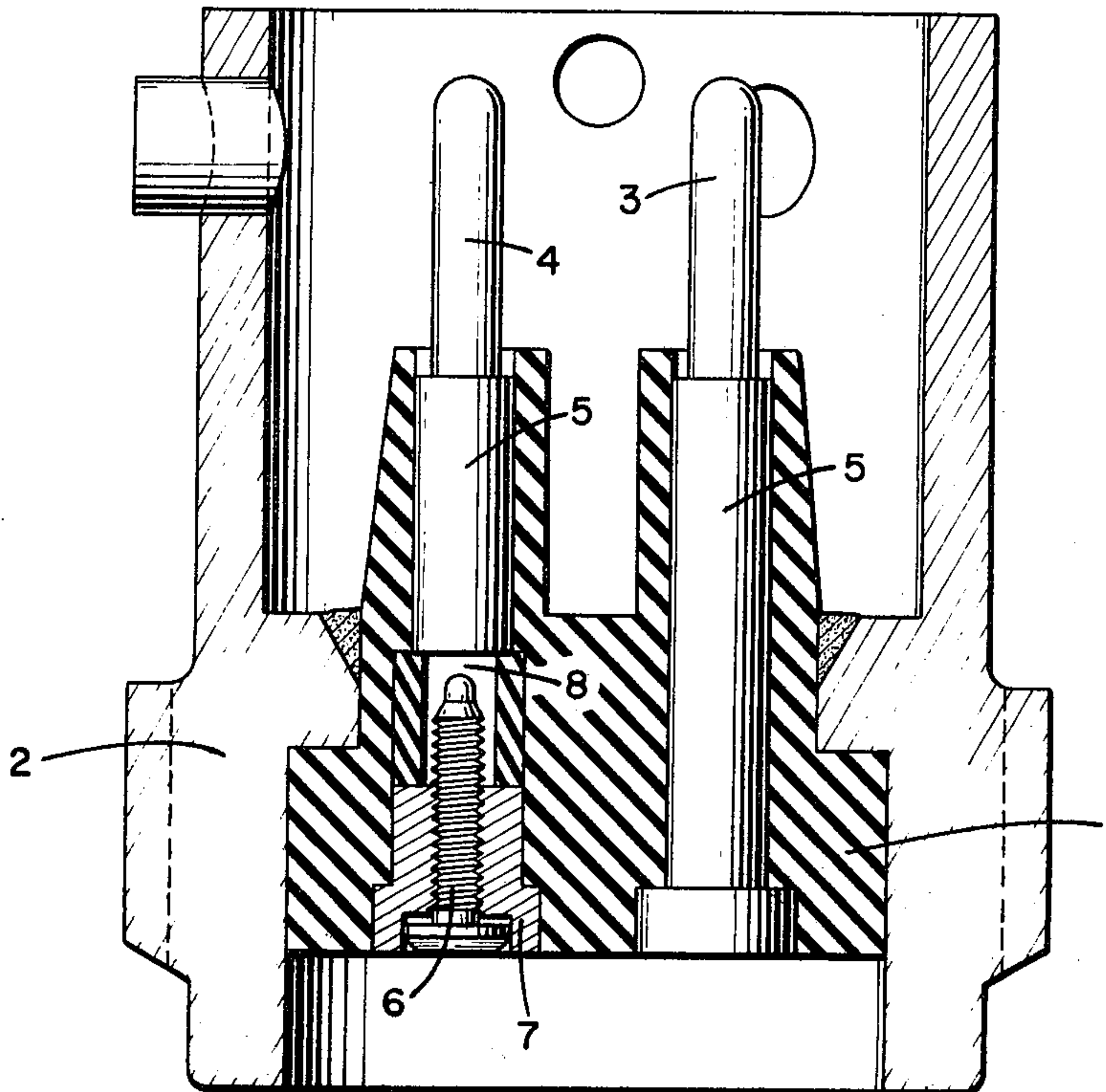
3,169,482	2/1965	Noble	102/28 EB
3,175,492	3/1965	Reyne et al.....	102/28
3,198,118	8/1965	Lorenz.....	102/70.2 R
3,157,120	11/1964	Morgan et al.	102/28 EB

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[57] ABSTRACT

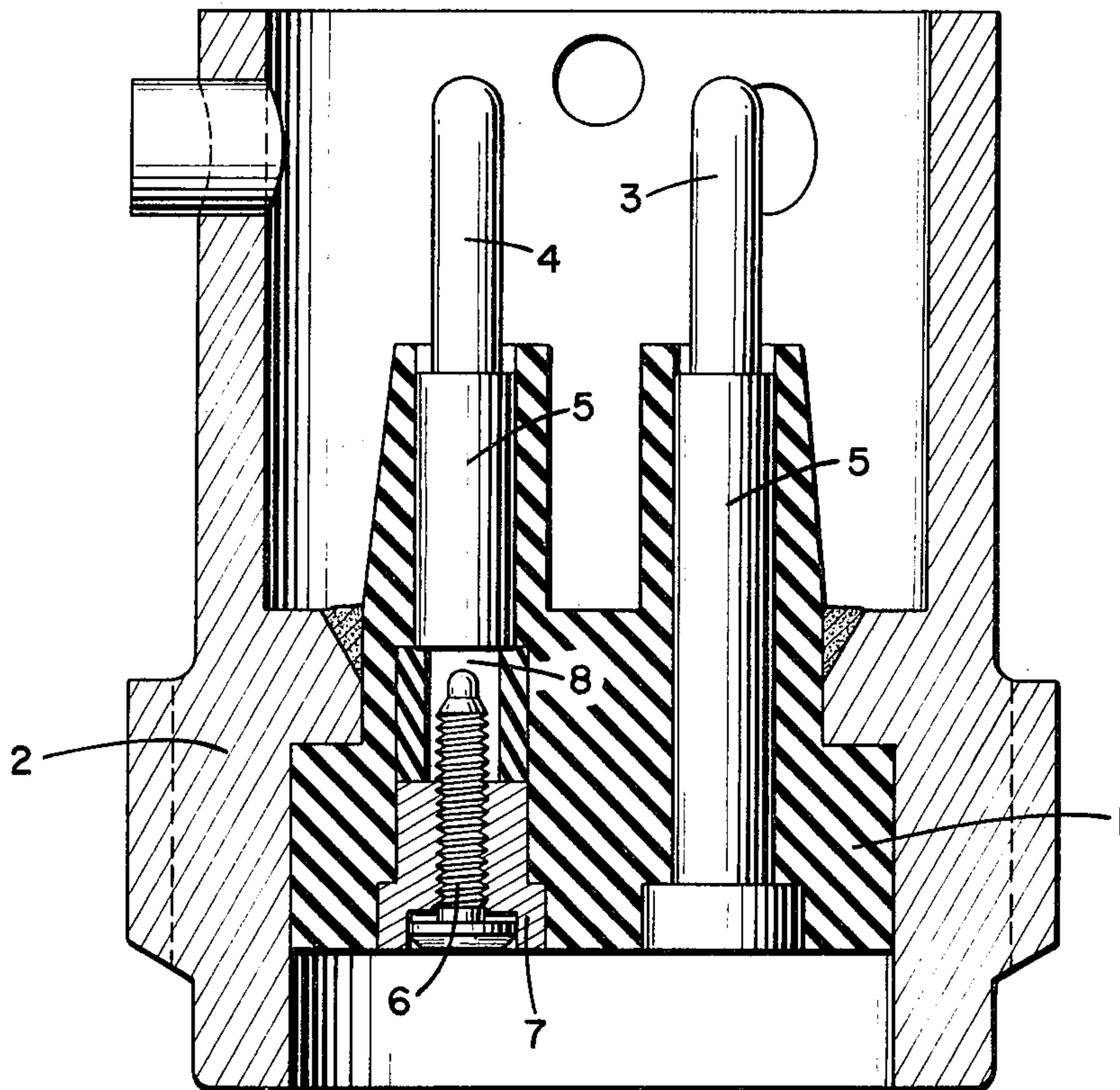
A component for an exploding wire fuse comprising a ceramic body having a pair of laterally spaced metallic pins mounted therein. One of the pins extends only partially into the ceramic body and a metallic adjusting pin is mounted within the ceramic body coaxial with that pin. An adjustable gap is provided between the coaxial pins to permit adjustment during assembly of the threshold potential for energizing the fuse.

1 Claim, 1 Drawing Figure



PATENTED MAR 19 1974

3,797,393



EXPLODING WIRE FUSE COMPONENT

BACKGROUND OF THE INVENTION

The present invention relates to a wire-exploding, pyrotechnic fuse and, in particular, to a component for use with a fuse of this type which prevents actuation of the fuse by voltages having a magnitude below a predetermined value.

It has been found that fuses of the wire-exploding, pyrotechnic type tend to deteriorate, becoming neutralized or less effective, when subjected to consecutive and random potentials due, for example, to ambient electromagnetic fields. Attempts have been made to prevent this deterioration by providing a device comprising a structure coaxial with a safety spark gap. Because of the surrounding structure, fine adjustment of the trigger fuse potential is prevented. Further, subsequent manufacturing difficulties result in a strong dispersion of the potential threshold (up to two-fold) making such devices troublesome and, in certain applications, unacceptable.

Accordingly, it is an object of this invention to eliminate these disadvantages while simultaneously ensuring that environmental requirements are met.

SUMMARY OF THE INVENTION

In accordance with my invention, a component for a pyrotechnic fuse is provided which comprises a metallized ceramic support having first and second laterally spaced iron-nickel alloy metallic pins mounted within apertures in the ceramic support. One of the pins includes an adjustable spark gap which permits the operational fuse potential to be set during assembly. The pins are connected at one end to the exploding wire of the fuse, and at the other end to a high energy pulse source.

BRIEF DESCRIPTION OF THE DRAWING

The FIGURE shows a diagrammatic cross-section view of the component for use with an exploding wire fuse.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the FIGURE the component comprises a ceramic body 1 held in position by being soldered or welded into a hollow metallic body 2 made of treated steel. The ceramic body 1 holds connecting pins 3 and 4 which are soldered or welded to the ceramic body by

means of the metallizing portions 5. Connecting pin 3 extends to the lower part of ceramic body 1 and connecting pin 4 is of shorter length. An adjusting screw 6 is threaded into the metallic sleeve 7 to provide a gap 8 between pin 5 and screw 6.

The upper ends of pins 3 and 4 comprise a lockable high-potential connector which may be connected to an energy supply and the lower end of the device serves to encapsulate the pyrotechnic charge and to make mechanical contact with the exploding wire fuse. The device insures that assembly and rigid mounting of the fuse will take place within a metallic-treated steel body.

The ceramic-metal junctions are obtained by means of soldering, brazing or welding. The exploding wire is made of platinum and may be joined to the pins' ends by tin-based solder.

During assembly, the inter-electrode spacing 8 is adjusted by rotating screw 6 until the desired gap is obtained. A high potential generator may be used to obtain the desired setting.

The device is primarily meant for use in exploding wire electro-pyrotechnic devices which, because of their design, provide a very high degree of safety and reliability. They may be used in a number of scientific applications such as plasma studies and microphotography.

What is claimed is:

1. A component for an exploding wire fuse comprising:

- a hollow metallic body;
- b. a ceramic body mounted within said metallic body;
- c a pyrotechnic charge and an exploding wire fuse in contact therewith, within said metallic body;
- d first and second parallel metallic pins mounted within said ceramic body and adapted to be connected to a voltage source;
- e a hollow metallic sleeve mounted in said ceramic body provided with a tapped bore having a longitudinal axis coaxial with that of said first pin; and
- f a threaded metallic adjustable pin screwed in said bore, one end of said adjustable pin being adjustably spaced from an end of said first metallic pin to provide a spark-gap therebetween, an ignition and testing-circuit being established through said first metallic pin, said gap, said adjustable pin, said exploding wire and said second metallic pin, the accurate potential threshold of said gap being set by connecting a power source to the ends of said circuit and rotating said adjustable pin.

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