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[75] Inventor: Peter Charles Seligmann, Johannesburg, South Africa	2,877,708	3/1959	Rey.....	102/27
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[73] Assignee: AE & CI Limited, Johannesburg, South Africa	3,320,883	5/1967	Welsh.....	102/27
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Primary Examiner—Verlin R. Pendegrass
Attorney, Agent, or Firm—Cushman, Darby & Cushman

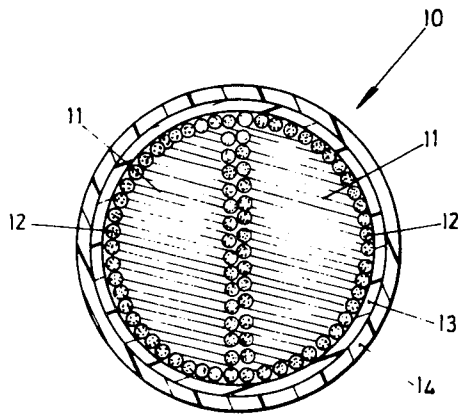
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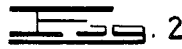
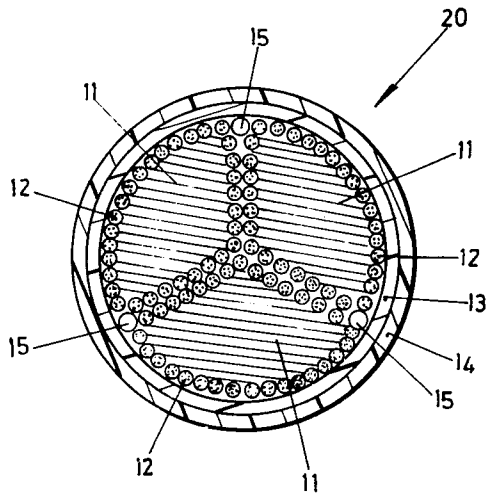
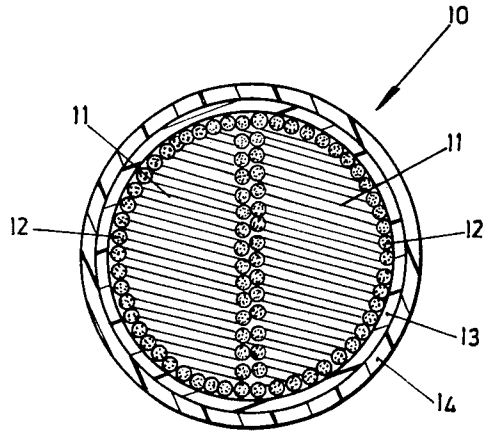
[52] **U.S. Cl.**..... **102/27 R**
[51] **Int. Cl.**..... **C06c 5/00**
[58] **Field of Search**..... 102/27

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[57] **ABSTRACT**
Fuses and cords having cores consisting of more than one semi-fuse. The fuses and cords are of circular cross-section, so that standard size detonator tubes can be used to make, for example, capped fuse.
It is expected that the multi-core fuses and cords have better burning characteristics.

8 Claims, 2 Drawing Figures





FUSES AND CORDS

This invention relates to fuses and cords having improved burning characteristics.

In blasting practice it is important that the burning characteristics of fuses or cords are within narrow specifications and also that no failures occur in the transmission of the flame through the fuse or cord caused by gaps in the charge thereof.

To avoid such failures and to increase reliability, two or more fuses or cords are often used in practice so that, if one of these fails, the other fuse or cord will ensure initiation of the explosive charges. This is particularly important in sequential blasting techniques where one failure will interrupt the sequence of the blast. The use of two or more fuses or cords is, however, not generally acceptable because of the extra costs and work involved.

Fuse-cords are generally manufactured by first making a semi-fuse comprising a core of an incendiary composition enclosed in a protective casing made of textile material or paper.

The semi-fuse is then covered by an outer coating of impermeable material such as bitumen, rubber and synthetic plastic materials.

It is an object of the present invention to provide a fuse or cord which gives the accuracy and reliability provided by the use of two or more cords or fuses but without the extra work involved to set up such additional circuits.

According to the present invention a plural core fuse is provided for use in initiating explosives which comprises at least two lengths of semi-fuse parallel to each other and enclosed within an outer casing.

The semi-fuses used in the fuse according to the invention contain charges of incendiary composition, which are less than the charge used in single core fuses or cords.

However, the total charge of the two or more parallel semi-fuses of the fuse according to the invention may be more than the charge of a single core fuse.

The fuse according to the invention preferably has a circular cross-section and the parallel semi-fuses contained therein will have a cross-section of irregular shape so that their cross-sections when added together form a circular cross-section. Possible voids between the irregular shapes may be filled with, for example, filler yarns.

The outer casing can be made of any suitable material which preferably is impermeable to moisture. Suitable materials include bitumens, rubber and synthetic plastics. The outer casing may be made by applying more than one coating onto the core so that a layered outer casing is obtained.

When plastics materials are used as the outer casing, these materials may be applied by extruding the casing onto the core.

The invention will now be described with reference to the accompanying drawings without restricting the scope of the invention to the embodiments shown therein.

FIG. 1 of the drawings shows a cross-section of a double core fuse and

FIG. 2 shows a cross-section of a triple core fuse.

In the drawings, like parts are indicated by the same

numerals.

In FIG. 1, the core of a double core fuse 10 comprises two semi-fuses each having an incendiary charge 11 contained in a protective coating of textile material 12.

The two semi-fuses are contained in a circular outer casing consisting of two layers 13 and 14 of impermeable materials, whereof the layer 14 is an extruded plastics material.

In FIG. 2, the core of fuse 20 comprises three semi-fuses each having an incendiary charge 11 contained in a protective coating of textile material 12. The three semi-fuses are contained in a circular outer casing as in FIG. 1.

The cross-sectional shapes of the semi-fuses vary in FIGS. 1 and 2 and are respectively equal to half a circle and a third of a circle. The outer shapes are obtained by forming a circular outer casing around the semi-fuses.

Further, in FIG. 2, the voids defined by the outer casing and the semi-fuses may be filled with filler yarns 15 as shown.

The plural core fuses or cords of the present invention have the following advantages over the use of two fuses or cords in blasting practice. They are cheaper than two fuses or cords and require less work to connect at the blasting site. They give the same added accuracy of burning speed and safety against failure as the use of two cords since the semi-fuses are individually manufactured and any failures and irregularities in burning speed in one semi-fuse will be smoothed out by the other semi-fuse or semi-fuses in the core.

The circular cross-section is advantageous in that the fuses of the invention can be used with standard size detonator tubes to make capped fuses without the necessity to manufacture oversized detonator tubes.

What we claim is:

1. A plural core non-detonating incendiary fuse for use in initiating explosives, said fuse having at least two contacting parallel lengths of semi-fuse, the cross-section of the lengths of semi-fuse when added together forming a substantially circular cross-section, each of said contacting parallel lengths of semi-fuse having a core of incendiary composition, said semi-fuses being enclosed within an outer casing thereby forming a plural core incendiary fuse of circular cross-section.

2. A fuse as claimed in claim 1 wherein the semi-fuse has a charge of incendiary composition which is less than the charge used in a single core fuse.

3. A fuse as claimed in claim 1 wherein the total charge of the semi-fuses of the core is more than the charge used in a single core fuse.

4. A fuse as claimed in claim 1 wherein any voids between the lengths of semi-fuse are filled with yarns.

5. A fuse as claimed in claim 1 wherein the outer casing contains at least one moisture impermeable material.

6. A fuse as claimed in claim 5 wherein the moisture impermeable material is selected from bitumen, rubber and synthetic plastics material.

7. A fuse as claimed in claim 1 wherein the outer casing consists of more than one layer of a coating material.

8. A fuse as claimed in claim 1 adapted for use with standard size detonator tubes.

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