

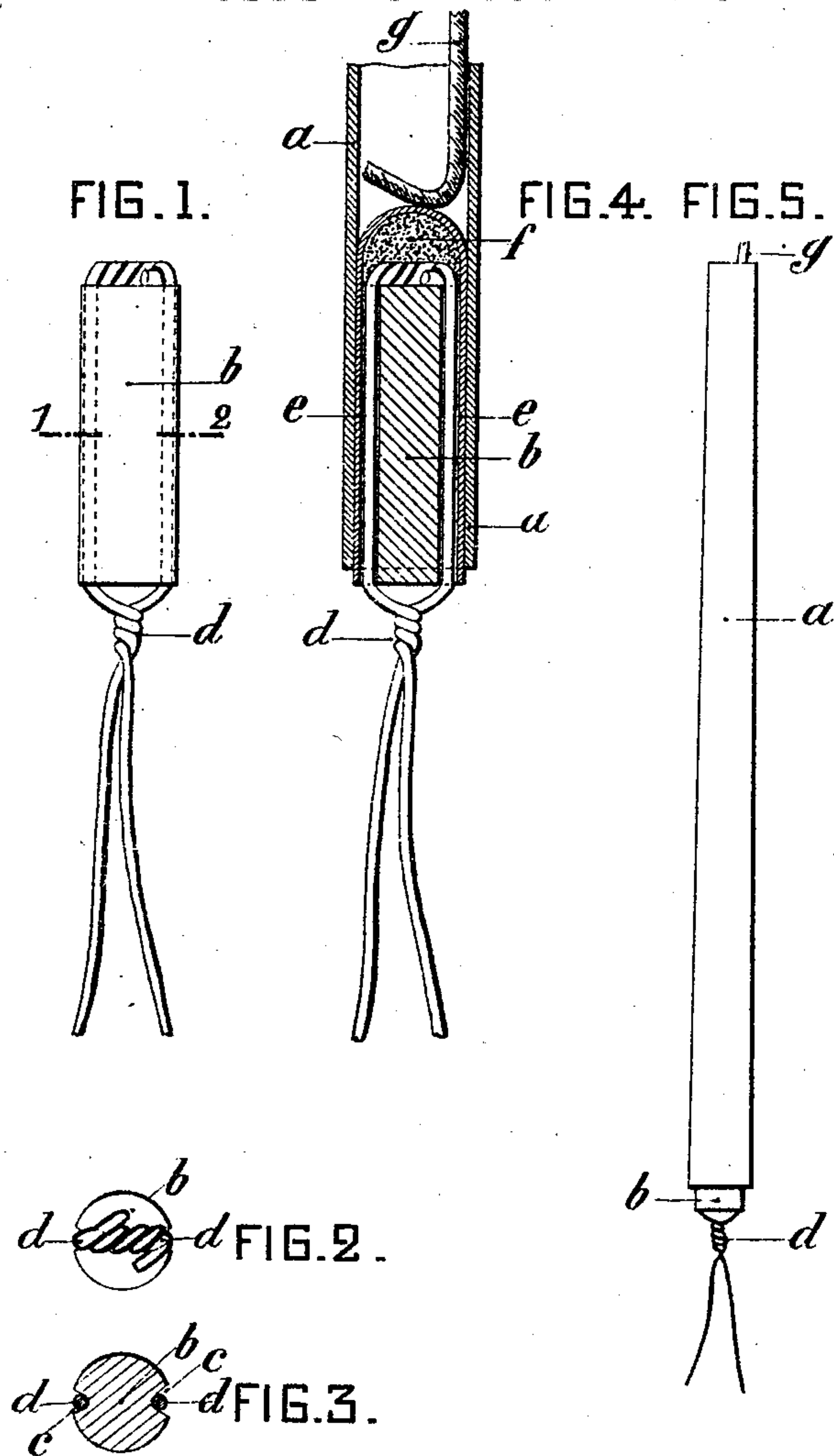
(No Model.)

J. P. A. SCOLA.

ELECTRIC FUSE FOR BLASTING.

No. 347,013.

Patented Aug. 10, 1886.



Witnesses:
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UNITED STATES PATENT OFFICE.

JEAN PIERRE ALEXANDRE SCOLA, OF PARIS, FRANCE.

ELECTRIC FUSE FOR BLASTING.

SPECIFICATION forming part of Letters Patent No. 347,013, dated August 10, 1886.

Application filed March 27, 1886. Serial No. 196,754. (No model.)

To all whom it may concern:

Be it known that I, JEAN PIERRE ALEXANDRE SCOLA, of the city of Paris, France, have invented a new and useful Electric Lighting-Fuse for Blasting Purposes, of which the following is a full, clear, and exact description.

This invention relates to electric lighting-fuses or lighters for use in blasting by means of gunpowder or dynamite in mines generally, but more especially in coal-mines liable to the presence of fire-damp. These lighters entirely obviate the use of fuses of all kinds which require to be ignited by a flame. They are also more economical, and a great saving of time is effected, especially in the case of mis-fires, as the lighter can be immediately replaced without the liability of accidents, such as are ordinarily caused in drawing the charges, which can only be done after an interval of twenty-four hours. Moreover, as several shots can be fired instantaneously, no loss of time is incurred by the workmen.

Reference is to be had to the accompanying drawings, forming part of this specification, which illustrate an example of the invention.

Figure 1 represents the plug used with the lighter of this invention, with the conducting-wires attached. Fig. 2 is a plan of the same, and Fig. 3 a horizontal section on line 1 2 of Fig. 1. Fig. 4 is a longitudinal section, and Fig. 5 a longitudinal elevation, of the lighter.

The same letters of reference represent the same parts in all the figures.

The "lighter" is composed of a grooved plug, *b*, embraced longitudinally by the conducting-wires *d*, which are first twisted together at the inner end of the plug and then laid in the groove *c*. The two wires may be placed close to one another at the outer end of the plug, as shown. The wire at the inner end of the plug is then naked, so as to leave the two ends exposed, which are then flattened down. The plug is inclosed in a paper sheath, *e*, a charge of fulminate being filled into the space *f* at the closed end of the sheath inclosing the naked ends of the wires. The electric spark produced on the passage of the current between the naked ends of the wires ignites the fulminate. The electric lighter is introduced into a tube, *a*, of copper or pasteboard, pro-

vided with a quick-match, *g*, which is ignited and projected by the fulminate into the hole and fires the charge of powder placed therein. 55

For firing dynamite, the lighter is modified as follows: The pasteboard tube is dispensed with and the plug is introduced into an ordinary detonating capsule containing a fulminate. The electric lighter is separated from the fulminate by a space of from four to six millimeters, so as to avoid accident caused by friction or otherwise. The capsule thus prepared is inserted in the charge in the ordinary way, the additional advantage, however, being obtained of freedom from liability of igniting the priming *f*, which is the cause of so much loss of time and material, as well as of danger when drawing mis-fires. The electric priming will, in fact, either instantaneously produce an explosion or not at all, and there will be no risk attending the immediate renewal of the priming or withdrawal of the charge. 60 65 70

Any kind of electrical apparatus may be employed for exploding these lighters; but it is preferred to use those by means of which several shots, either of powder or dynamite, may be fired simultaneously. 75

It will be evident that the herein-described arrangements may be applied for producing the ignition of a Bickford fuse, which would in this case be substituted for the quick-match *g* in tube *a*, thereby avoiding the use of a naked flame. 80 85

I claim—

An electric lighting-fuse or lighter for blasting purposes, consisting in the combination of the guide-tube *a* with the grooved wooden plug *b*, the conducting-wires *d*, the fulminate *f*, above said plug, the paper, or other sheath or cap *e*, and quick-match *g*, the sheath or cap *e*, containing the plug *b*, the wires *d*, and the fulminate *f*, and being itself contained within the tube *a*, substantially as described, for the purpose specified. 90 95

The foregoing specification of my electric lighting-fuses for blasting purposes signed by me this 10th day of March, 1886.

JEAN PIERRE ALEXANDRE SCOLA.

Witnesses:

ROBT. M. HOOPER,
ALBERT MOREAUX.