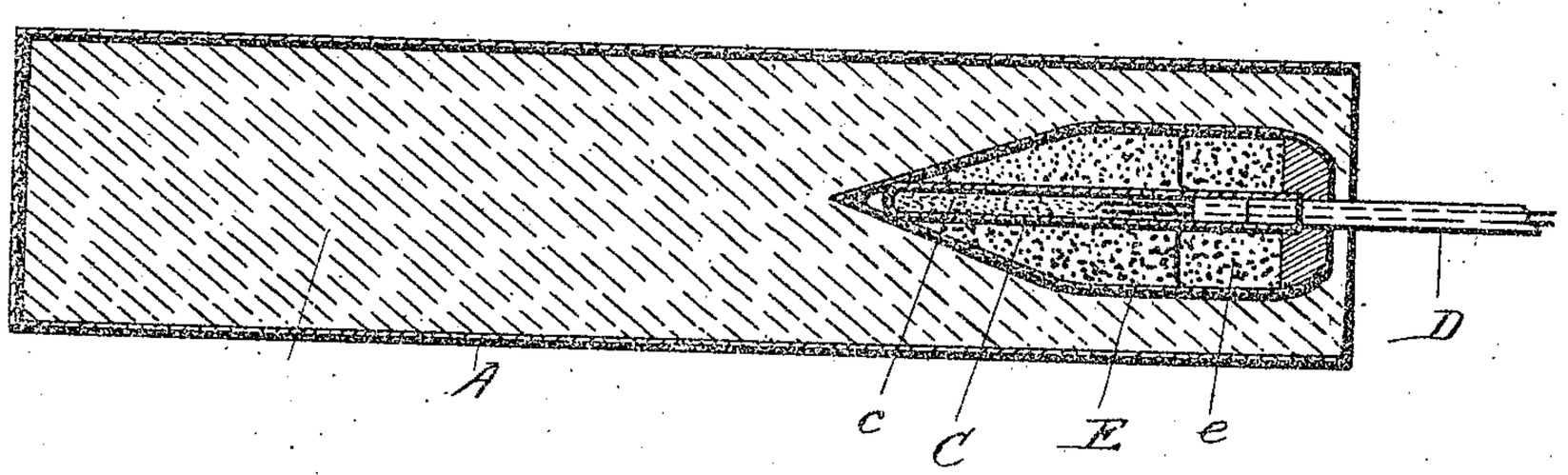
(No Model.)

P. A. OLIVER.

BLASTING CARTRIDGE.

No. 551,600. Patented Dec. 17, 1895.



Witnesses

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PAUL AMBROSE OLIVER, OF OLIVER'S MILLS, PENNSYLVANIA.

BLASTING-CARTRIDGE.

SPECIFICATION forming part of Letters Patent No. 551,600, dated December 17, 1895.

Application filed January 19, 1895. Serial No. 535,484. (No model.)

To all whom it may concern:

Be it known that I, PAUL AMBROSE OLIVER, a citizen of the United States, residing at Oliver's Mills, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Blasting Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to blasting devices; and it consists in the novel construction and combination of the parts, and in the method, hereinafter fully described and claimed, which enables blasting to be performed in the presence of inflammable gas without igniting the same.

The drawing shows a longitudinal section through a cartridge and its cap or primer constructed according to this invention.

A is an outer inclosing cartridge-case of any approved material. This case is filled with a flameless explosive compound B, preferably the kind commercially known as "flameless dynamite." This flameless explosive compound acts in a small space, takes up less room than ordinary black blasting-powder, is a high explosive, and is set off by means of a cap or primer. This flameless explosive compound when exploded will not ignite the gas in a coal-mine, or air mixed with fire-damp or coal-dust, but as it requires a powerful cap to set it off it also becomes necessary that the cap itself should produce no flame, as otherwise the flame of the cap bursting through the blasting-charge would ignite the gas in the mine.

C is a metallic cap containing any approved detonating compound or fulminate, ~~such as the fulminate~~ of mercury *c*.

D is a fuse inserted in the end of the cap C. This fuse is preferably an electric fuse consisting of two insulated wires.

E is a case secured to the cap C and surrounding it, and *e* is a flame-extinguishing substance in the form of a dry powder, such as borax and bicarbonate of soda or alum and borax, contained in the case E, surrounding the cap, and interposed between the cap and the flameless explosive compound B.

The front end of the case E is preferably pointed to enable it to be thrust into the compound B, but it is not necessarily pointed, as the case may be packed in with the flameless explosive compound in a bore-hole, or it may be placed upon a rock and covered with the flameless explosive compound and an outer layer of clay.

The ends of the case E and the cap C are plugged up in any approved manner, such as, for instance, with melted sulphur.

What I claim is—

1. The combination, with an outer cartridge case containing a flameless explosive compound, of a detonating cap provided with a fuse, and a case containing a flame extinguishing substance, encircling the said cap and interposed between it and the flameless explosive compound, substantially as set forth.

2. The combination, with a blasting charge consisting of a flameless explosive compound, of a detonating cap embedded in the said charge and provided with means for exploding it, and a charge of flame extinguishing substance in the form of a dry powder surrounding the said cap and interposed between it and the blasting charge, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

PAUL AMBROSE OLIVER.

Witnesses:
FRED. SCHNEIDER,
WM. MACDONALD.