L. GRAHAM.

SHOT SHOOTING DEVICE FOR USE IN BLASTING.

APPLICATION FILED NOV. 17, 1914.

1,155,230. Patented Sept. 28, 1915.

Fig. 1.

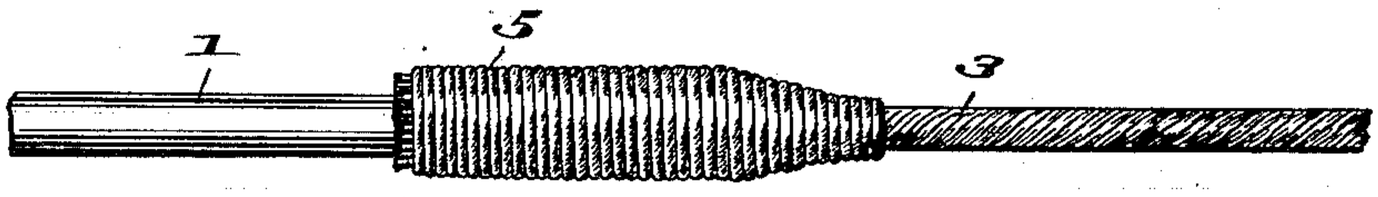
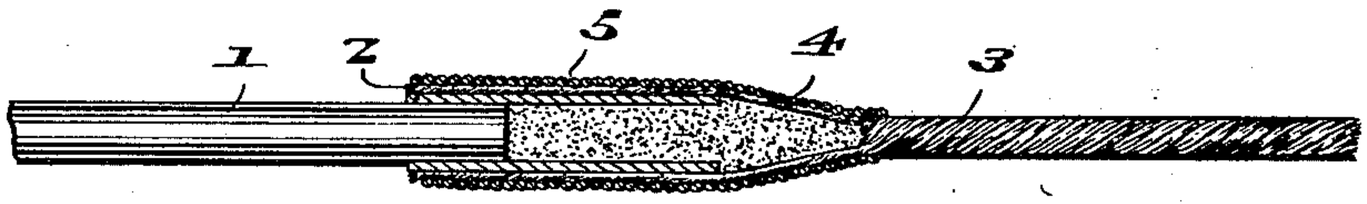


Fig. 2.



Witnesses

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SHOT-SHOOTING DEVICE FOR USE IN BLASTING.

1,155,230. Specification of Letters Patent. Patented Sept. 28, 1915.

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To all whom it may concern:

Be it known that I, LEE GRAHAM, a citizen of the United States, residing at Sandford, in the county of Vigo and State of Indiana, have invented new and useful Improvements in Shot-Shooting Devices for Use in Blasting, of which the following is a specification.

This invention relates to a shot shooting device for use in blasting.

It is a well known fact that the use of the ordinary type of fuses in blasting in mining operations renders the occupation of the shot shooters extremely hazardous, owing to the danger of premature explosion in each case.

It is therefore the chief purpose of my invention to provide a shot shooting device which is adapted for use in connection with an ordianry fuse, but which will eliminate the danger of premature explosion. In accomplishing this object I propose to provide an elongated combustible member or slow match, which will burn positively at a predetermined rate of speed, say at different intervals from five minutes to two hours as the occasion may require, together with means for connecting the same with one end of a fuse, whereby the fuse will be ignited only after a sufficient length of time has elapsed to permit the person who ignited the match and all others to remove to a safe distance.

In the accompanying drawings:—Figure 1 represents a side elevation of a fuse having the shot shooting device applied thereto; Fig. 2 is a longitudinal sectional view taken through the same.

In the drawings the numeral 1 designates a blasting fuse of the ordinary well known type, which is adapted to have a tubular sleeve 2 of paper or metal, such as tin or the like, fitted onto one end of the same. The slow match, which is the essential part of my improved shot shooting device, is in the form of an elongated member or cord 3. The member 3 may be formed from a piece of twisted cotton rope or cord, one end of which is unraveled so as to present a plurality of strands, which are separated in diverging relation to each other as at 4 to provide a substantially conical pocket. The terminal portions of these strands are then extended in parallel relation to each other and are engaged with the outer periphery of the connecting sleeve 2. The strands are then wrapped with a combustible cord 5 or the like, so as to bind the strands upon the sleeve and also to render the pockets 4 more secure. The wrapping also is extended onto the unraveled portion of the member 3 to a slight extent so as to prevent further unraveling of the same. Prior to the application of the sleeve 2 to the fuse, the said sleeve and the pocket 4 are to be filled with powder or other explosive material.

In the practical use of the shot shooting device, the connecting sleeve of the same is applied to the exteriorly disposed end of the fuse, which latter extends into the drilled hole to its point of connection with the cartridge and explosive material within the hole at the inner end of the latter. It being known that the slow match will burn at the rate of a certain number of inches per minute, the said match is severed at the proper distance from the connecting sleeve. The free end of the remaining portion of the match is then ignited, whereupon it will burn steadily for a length of time sufficient to permit the miners to escape, before it reaches the powder filled pocket 4. This powder will burn and will transmit the fire through the sleeve 2 to the adjacent end of the fuse, which will be ignited. This fuse, which is an uncertain and dangerous igniting device, will then transmit the fire to the cartridge in the drilled hole in the ordinary well known manner. The burning quality of the slow match is such as to preclude the possibility of its being extinguished by the concussion of the air incident with other explosions which may occur in the mine while this match is burning.

From the foregoing description, taken in connection with the accompanying drawing, it should be apparent that I have provided a shot shooting device which will be reliable and efficient in use and which should render blasting less dangerous than it is when the ordinary type of fuse alone is employed.

It is of course to be understood that changes, variations and modifications may be made in the invention such as come properly within the scope of the appended claim.

What is claimed is:—

The combination with a blasting fuse, of a tubular sleeve fitted in one end of the same, a cord-like member having an un-

raveled end forming a plurality of strands providing a pocket receiving the said tubular sleeve, explosive substance filling the said sleeve and pocket, and a combustible cord coiled about the strands without the sleeve and coextensive with the length of the said strands.

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

LEE GRAHAM.

Witnesses:
JOE DREHER,
RAY GRAHAM.