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D. F. McRAE

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SAFETY COMBINATION FUSE TIP

Filed June 18, 1927

Fig. 1

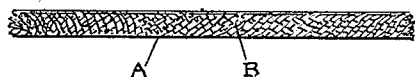


Fig. 2

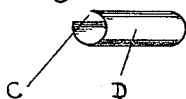


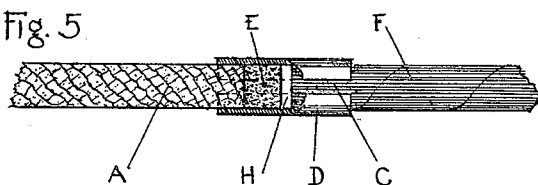
Fig. 3



Fig. 4



Fig. 5



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SAFETY COMBINATION FUSE TIP

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This invention relates to a means for lighting blasting fuses and has for its objects:

First. To provide a fuse lighter which can not blow out.

5 Second. To provide a fuse lighter which is immune to damage by moisture.

Third. To devise a lighter which will effect material economies in the quantity of fuse required.

10 Fourth. To invent a fuse igniter which shall be efficient, economical, and cheap to make and use.

In the drawings:

Fig. 1 shows the wick portion of my device;

15 Fig. 2 shows the clip which fastens my invention to a piece of ordinary fuse;

Fig. 3 shows the deflagrating igniter;

Fig. 4 represents a piece of fuse;

20 Fig. 5 shows my invention attached to a piece of fuse.

My invention has been made to avoid the necessity of carrying two lights when igniting a fuse—one for illumination and the other to ignite the fuse, which latter is frequently 25 extinguished by spitting of the fuse; to prevent smoke and odor; to assure the ignition of the fuse; to make it possible to extinguish the fuse when necessary; and in general to make blasting more certain, safe, and health- 30 ful.

My lighter comprises a cotton wick A impregnated with a solution made up of powdered sulphur, potassium nitrate, and water. The evaporation of the water leaves the wick 35 filled with the sulphur and potassium nitrate in intimate mixture.

I also provide a deflagrating igniter E made of powdered sulphur, powdered charcoal, potassium nitrate, and a cohesive binder 40 such as liquid glue. This is to furnish a hot flame to insure the lighting of the fuse.

A substantially cylindrical clip D made of light tin with a slit C down one side is used to assemble the various parts. As shown in 45 Fig. 5 the igniter E is placed in clip D some distance from one end, the wick A is then inserted in the clip in contact with E. The fuse F is inserted in the other end of said clip and a space H is left between igniter E 50 and the end of fuse F, to permit of access of

an adequate supply of oxygen to said igniter and also to permit the development of a considerable flame adjacent the end of fuse F. The clip is then squeezed to make certain that all parts will be held in properly assembled 55 relation.

After the parts are assembled the wick A is lighted. It takes fire readily and burns surely without the possibility of being extinguished by wind; the rate of burning is so 60 slow that it will save at least 50 percent of the fuse necessary with the other methods of lighting. The rate of burning can be controlled by the strength of the solution employed to impregnate it, as the stronger the 65 solution the faster it will burn.

When the wick has been burned to that end of it which contacts igniter E the said igniter burns with deflagration; the slit C and the space H between E and fuse F insuring an abundant supply of air. This violent 70 flame ignites the fuse without fail.

A wick A one and a half inches long will equal approximately four feet of ordinary mine fuse in duration of burning. 75

In preparing the compound E to act as an ignition, I prefer to use the ingredients in about the following proportions, viz:—powdered sulphur, 24%; powdered charcoal, 24%; 80 potassium nitrate, 50%; ordinary liquid glue or other cohesive material, 2%. Good results may be obtained, however, when the ingredients are within approximately the following limitations: powdered sulphur, 20%; powdered charcoal, 20%; potassium nitrate, 85 58%; liquid glue, 2%.

And in the preparation of the solution used in saturating the wick A, I prefer to use these ingredients in about the following proportions: powdered sulphur, boiled and strained, 90 5%; potassium nitrate, 5%; water, 90%. The percentages are either weight or measure. Good results may be obtained, however, when the ingredients are within approximately the following limitations: powdered sulphur, 95 from 4% to 10%; potassium nitrate, from 4% to 10%; the balance water in each case. The stronger the solution, the faster the wick will burn; the weaker the solution, the slower the wick will burn. 100

Among the advantages of my invention are: It is not damaged by moisture, since if it becomes damp it is as good as ever when dried; is not affected by frost; does not deteriorate with age; the assembled parts can
5 be readily removed from the fuse at any time before igniter E has burned; it cannot blow out nor can the wick blaze; it will not explode.

10 I claim:

1. A wick saturated with a solution having approximately the following composition: powdered sulphur, boiled and strained, 5% to 10%; potassium nitrate, 5% to 10%; water
15 80% to 90%.

2. In combination, a slow burning member, a clip attached to said member, and a deflagrating member in said clip, said clip being longitudinally slit, and said deflagrating member being spaced from an end of said
20 clip to leave a space between said member and a fuse inserted into said end of said clip.

In witness whereof I affix my signature.

DAVID F. McRAE.

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