

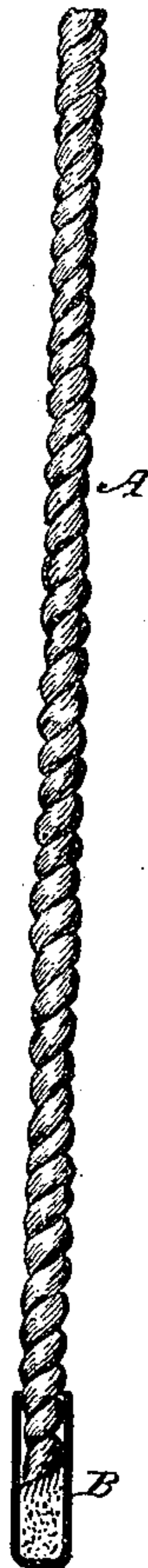
T. P. SHAFFNER.

Blasting Fuse.

98,428.

Patented Dec. 28, 1869.

Fig. 1



Witnesses
James Deveau
George S. Hamlin

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T. P. Shaffner

UNITED STATES PATENT OFFICE.

TAL. P. SHAFFNER, OF LOUISVILLE, KENTUCKY.

IMPROVEMENT IN BLASTING-FUSES.

Specification forming part of Letters Patent No. 98,428, dated December 28, 1869.

To all whom it may concern:

Be it known that I, TALIAFERRO P. SHAFFNER, of Louisville, Jefferson county, State of Kentucky, have invented or discovered a new and Improved Blasting-Fuse for Exploding Gunpowder, Gun-Cotton, and other explosive substances that ordinarily ignite and explode by a spark.

Military engineering has established that only thirty-two hundredths of any one charge of gunpowder can be exploded. The remainder is precipitated or burned after the explosion has occurred and passed. This condition of explosive quality, or the evolvment of gases by the sudden burning or ignition of gunpowder, is necessary for service in guns, especially long guns or fire-arms requiring an elongation of force for propelling ponderable substances. In blasting rock an entire different condition is required. To disrupt matter the most active and rapid explosion is the most effective and economical. For this reason nitrolem is more serviceable for blasting purposes than gunpowder. Nitrolem is concentrated as to cubic space, and occupies less room than gunpowder, and when an explosion takes place the atoms lie close together, while on the other hand each grain of gunpowder is cushioned by air.

In blasting rock it is desirable to explode the greatest possible amount of gunpowder, while in cannon only thirty-two hundredths of a charge can be exploded. It may be possible to excel that degree in practical blasting in proportion to the resistance given by the tamping; nevertheless, miners generally observe that the greater part of the powder burns after the rock has been broken. It is also shown by the greater amount of smoke thrown off.

The nature of my discovery or invention consists in the application of a cap containing fulminate or detonating powder to an ordinary blasting or train fuse, this cap to be fixed to the end of the fuse and placed in the upper part of the gunpowder-charge in the drill-hole.

The fire is carried to the cap through the fuse, and on the explosion of the fulminate in the cap the force or gases evolved are spread throughout the gunpowder and approximately ignite every grain of the gunpowder at the same instant, practically effecting a greater disruption of matter; or a less quantity of gunpowder can be used to effect the same result as now realized in blasting by the greater amount of gunpowder in any one given drill-hole.

The drawing represents a fuse with a cap fitted onto it. A is the fuse, and B is the cap. The cap is charged with the ordinary fulminate used in percussion caps for fire-arms; or, instead thereof, in a cap or tube may be confined gun-cotton or other substance of high explosive power. The fuse is the common train or blasting fuse. The cap may be fitted on and crimped to the fuse, or it may be fastened to it by pitch or other plastic substance. I prefer at least ten grains of fulminate to be the cap-charge.

Having now fully described the nature and process of my discovery or invention sufficiently full and distinct to enable those skilled in the arts to which it belongs to make and use the same, what I claim, and desire to secure by Letters Patent as my discovery or invention, is—

1. The combination of a train or blasting fuse with a metallic or other suitable cap or vessel charged with fulminate or detonating powder, substantially in the manner and for the purposes hereinbefore described.

2. The combination of materials of different explosive powers and densities in the same fuse, or in parts of fuses when incased, and so connected that the ignition of the one will reach the other, substantially in the manner and for the purposes hereinbefore described.

TAL. P. SHAFFNER.

Witnesses:

JAMES DEVEAU,

GEORGE S. HAMLIN.