



Witnesses

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per

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UNITED STATES PATENT OFFICE.

LOUIS LHEURE, OF PARIS, FRANCE.

MINE.

No. 905,336.

Specification of Letters Patent.

Patented Dec. 1, 1908.

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To all whom it may concern:

Be it known that I, LOUIS LHEURE, citizen of France, residing at Paris, France, have invented certain new and useful Improvements in Mines, of which the following is a specification.

This invention relates to improvements in mines and the object of the invention is to use in mines nitrate of ammonia exclusively as the explosive.

Up to the present it has been impossible to bring about in practice the explosion of nitrate of ammonia by itself and all writers are agreed in recognizing this body as practically inexplusive. Nitrate of ammonia has of course been employed in the manufacture of explosives as a component but never as an explosive by itself.

The present invention has for its object to construct a mine which permits of obtaining the detonation of this slightly sensitive substance.

In the accompanying drawings the improved mine is shown in Figure 1 in vertical section. Fig. 2 represents in vertical section a modification of Fig. 1.

The improved mine is arranged as follows: Into the charge *a* of nitrate of ammonia a detonating tube *b* of a sufficiently large diameter is introduced for the whole or part of the length of the charge.

The detonating tube *b* consists of a tube filled with trinitrotoluene or trinitrobenzin or with another suitable substance.

The detonating tube *b* is capable of being excited either directly by a detonator *c* of

fulminate of mercury placed in its top part (Fig. 1) or without detonator merely by a detonating tube *e* of smaller diameter extending from the shot hole and receiving its ignition from the outside (Fig. 2).

The detonator *c* (Fig. 1) is fired by the fuse *d* as usual.

It is indispensable that the tamping of the explosive should be done in a careful and satisfactory manner for the explosion to be complete.

In the carrying out of this method of using nitrate of ammonia, the same may be employed either in the pulverulent state or in crystals, or preferably in the form of compressed cartridges, which are provided with a central hole or passage for the detonating tube.

What I do claim and desire to secure by Letters Patent is:

An improved mine consisting of nitrate of ammonia exclusively as explosive having a detonating tube of sufficiently large diameter inclosed in the charge for the whole length of the same, a detonator of fulminate of mercury for igniting the detonating tube and a fuse for firing the detonator from outside the mine, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

LOUIS LHEURE.

Witnesses:

JOHN BAKER,
ALFRED FREY.