

UNITED STATES PATENT OFFICE.

SILAS R. DIVINE, OF LOCH SHELDRAKE, NEW YORK.

EXPLOSIVE COMPOUND.

SPECIFICATION forming part of Letters Patent No. 540,647, dated June 11, 1895.

Application filed November 2, 1894. Serial No. 527,750. (No specimens.)

To all whom it may concern:

Be it known that I, SILAS R. DIVINE, a citizen of the United States, residing at Loch Sheldrake, county of Sullivan, State of New York, have invented certain new and useful Improvements in Explosive Compounds, of which the following is a full, clear, and exact description.

My invention relates to a high explosive; and my invention consists in an explosive compound composed of nitrate of lead and a nitrated hydrocarbon of the benzol series which is of itself non-explosive, such, for example, as dinitro-benzol.

In forming my explosive compound I employ nitrate of lead, $(Pb, (NO_3)_2)$ and, preferably, as the nitrated hydrocarbon, the dinitro-benzol of commerce, $(C_6H_4, (NO_2)_2)$. The desirable proportions of these ingredients, to effect the best results with the compound as an explosive, are four (4) parts of nitrate of lead and one (1) part of dinitro-benzol. In fabricating the compound the dinitro-benzol may be melted in a suitable vessel by the application thereto of the requisite degree of heat, and may then be mixed, while cooling and congealing, with the nitrate of lead, which has been pulverized to a fine powder, as by stirring the nitrate of lead into the dinitro-benzol in a suitable receptacle. It is desirable to continue the stirring until the dinitro-benzol has congealed, when the mixed materials will be found to assume the form of a granular powder, ready for use. The pulverized nitrate of lead may, if desired, be intimately mixed with the melted dinitro-benzol, and the mass be allowed to remain quiescent while the dinitro-benzol is congealing; and when the mass has solidified, it may be broken up into pieces and then ground in a

suitable mill into the form of a granular powder for use.

Other nitrated hydrocarbons of the benzol series possessing the character and non-explosibility, when alone, of dinitro-benzol, may be employed in place of dinitro-benzol in the compound; as, for example, the higher nitrated compounds of naphtholine, such as tetranitro-naphtholine, $(C_{10}H_6, (NO_2)_4)$; or picric acid which has had its sensitiveness or explosibility diminished by the admixture with it of some suitable inert material, such as a hydro-carbon; or mixtures of other nitrated hydrocarbons of the benzol series of a nature similar to nitro-benzol.

The proportions of the said ingredients in the compound may be varied somewhat from those hereinbefore stated as desirable, and an effective high explosive of like characteristics be produced.

Fulminate of mercury, in the form of a detonating-cap, such as usually employed in blasting-operations, will effect the explosion of the described compound.

The compound is useful in mining operations where it is desired to break up the material to be blasted into small fragments, as where the resistance to be overcome is very great.

What I claim as my invention, and desire to secure by Letters Patent, is—

An explosive compound composed of nitrate of lead and a nitrated hydrocarbon of the benzol series, which is of itself non-explosive, such, for example, as dinitro-benzol, substantially as and for the purposes set forth.

SILAS R. DIVINE.

Witnesses:

DE LANCEY T. SMITH,
ARDEN S. FITCH.