

# UNITED STATES PATENT OFFICE.

EUGÈNE TURPIN, OF PARIS, FRANCE.

## EXPLOSIVE COMPOUND.

SPECIFICATION forming part of Letters Patent No. 263,824, dated September 5, 1882.

Application filed December 13, 1881. (No specimens.) Patented in England October 18, 1881, No. 4,544.

*To all whom it may concern:*

Be it known that I, EUGÈNE TURPIN, a citizen of the Republic of France, residing at Paris, in the Republic of France, have invented a new and useful Explosive Compound, (for which I have obtained a patent in Great Britain, No. 4,544, bearing date the 18th day of October, 1881, and sealed the 27th day of January, 1882;) and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

I have discovered that hyponitric anhydride, (nitrogen tetroxide or peroxide,) when employed in a liquid state at low temperature, possesses the property, hitherto unknown, of forming, with certain combustible substances, explosive mixtures, to which I have given the generic name of "Panclastite." If, for example, the hyponitric anhydride be mixed with sulphuret of carbon a compound will be obtained possessing the following properties, namely: If fired with an initial explosion, either by means of a priming of fulminate of mercury by a charge of powder, or by other means which will produce an initial explosion, the whole compound or mixture is instantly in a blaze and produces a violent explosion with a brilliant light. If the mixture be slowly lighted, an intense light is produced without explosion. Platinum instantly melts in the flame.

The proportions of the mixture which give the best results are equal volumes of the explosive and of the combustible material employed; but for obtaining a very violent detonation two volumes of the peroxide may be mixed with one volume of the combustible body, the peroxide being the base of the mixture in all cases. The same explosive effects may be produced (as with the sulphuret of carbon) by mixing the peroxide with benzole or kindred combustible substances, because of the combustible properties of the hyponitric anhydride, (nitrogen tetroxide or peroxide.) This explosive mixture may be absorbed either by infusory earth or by gunpowder or other powder, or gun-cotton or other substance which will render it solid.

When gun-cotton mixed with sulphuret of carbon is employed the hyponitric anhydride

should only be added at the moment of explosion. This explosive matter is applicable for blasting purposes in mines, for the charging of projectiles, torpedoes, and in all cases where a powerful explosive is required.

Sulphuret of carbon ( $\text{CS}_2$ ) dissolves peroxide of nitrogen or hyponitric anhydride in any proportions, and this mixture is accompanied by a lowering of temperature of from  $15^\circ$  to  $20^\circ$  centigrade, and the compound presents the elementary composition of gunpowder, (less one equivalent of oxygen and one of oxide of potassium,)  $\text{NO}^4 + \text{CS}_2$ , ( $\text{KONO}^5 + \text{CS}$ , gunpowder,) and under certain conditions explodes with an energy equal if not superior to that of pure nitro-glycerine; but in order that the detonation may take place it is necessary that it should receive a violent concussion in the presence of fire. I employ for this purpose a priming of fulminate of mercury similar to that made for dynamite; or, better still, a charge of fine powder placed in the interior of the cartridge, which avoids the danger arising from the employment of fulminate. In free air its ignition by fire produces a most quiet and brilliant combustion. It does not explode by shock of any kind. The fall of a weight of sixteen hundred pounds from a height of ten feet does not effect an explosion between two pieces of iron.

I would repeat that the composition may be employed in a liquid state, or may be absorbed by the aid of inert porous material in like manner as in making dynamite.

Benzine, which may be considered the equivalent of sulphuret of carbon, is affected very strongly by peroxide of nitrogen, and is by it transformed into nitro-benzine.

To obtain peroxide of nitrogen any of the methods well known to chemists may be employed. To obtain it pure, I may reduce nitric acid, or decompose it by means of organic substances—such as sugar or starch—or I may extract it from the nitrous sulphuric acid produced in the manufacture of this acid; but I prefer to decompose nitrate of lead by means of heat.

The hyponitric anhydride should be employed at a low temperature and in a liquid state in practicing my invention; and when it is desired so to obtain it it may be collected first

in the form of a gas in very cold vessels, when it liquefies, and then remains in the liquid state at the ordinary temperature, in which state it may be mixed with the carbon sulphide, &c.

5 The mixture is made similarly to that of other liquids—such as wine and water, for instance—and the materials remain mixed indefinitely, the hyponitric anhydride being merely poured into the sulphuret of carbon or other combustible employed, or reciprocally.

10 The hyponitric anhydride constitutes the essential part of my compound or mixture.

To sum up briefly, my invention has for its object the production of a mixture which will  
15 detonate when it is inflamed by fulminate or

other analogous priming, or one which will produce light or intense heat when it is lighted by a flame burning steadily.

I claim—

The hereinbefore-described composition of 20 matter to be used as an explosive compound or for the purpose of producing light and heat, consisting of peroxide of nitrogen or hyponitric anhydride combined with sulphuret of carbon or its equivalent, as set forth.

EUG. TURPIN.

Witnesses:

A. LOUIS,

H. A. DUFRENE.