UNITED STATES PATENT OFFICE.

ARTHUR LA MOTTE, OF WILMINGTON, DELAWARE, ASSIGNOR TO THE E. I. DU PONT DE NEMOURS POWDER COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF NEW JERSEY.

NON-HYGROSCOPIC COMPOUND AND EXPLOSIVE TREATED THEREWITH.

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To all whom it may concern:

Be it known that I, ARTHUR LA MOTTE, a citizen of the United States, residing at Wilmington, county of New Castle, and State of Delaware, have invented a new and useful Improvement in Non-Hygroscopic Compound and Explosive Treated Therewith, of which the following is a full, clear, and exact description.

Many explosives—for instance, those containing oxidizing salts—are more or less hygroscopic or deliquescent, which militates considerably against their use as explosive compounds. Many attempts have been made to overcome the defects of these explosives by treating them—as, for instance, coating them—with various compounds. I have discovered a compound which is very effective for this purpose. My compound comprises an admixture of a nitronaphthalene and a nitrotoluene. I may use any one of the nitronaphthalenes or any one of the nitrotoluenes.

In carrying out my invention and as an example of the same I take from four to eight parts, by weight, of trinitrotoluene having a nitrogen content of about eighteen and one-half per cent. I heat this to its melting-point and dissolve therein from four to eight parts, by weight, of tetranitronaphthalene having a nitrogen content of about eighteen per cent. This admixture is then added to the explosive.

If I use a salt of ammonia, which is one of the oxidizing salts most necessary to be coated, I add eighty-eight parts of dry nitrate of ammonia in a vessel. This vessel is heated by suitable means to a temperature sufficient to melt the compound and coat the particles of the nitrate of ammonia with the melted compound.

Instead of first mixing the trinitrotoluene and the tetranitronaphthalene before adding the explosive, (in this case nitrate of ammonia,) I can admix the three together and subject the admixture to heat to produce the same result.

The admixture of the nitronaphthalene and nitrotoluene produces an extremely satisfactory coating, in that it is non-crystalline, therefore not liable in any way to fracture, and also has a low fusing-point, which enables it to be melted readily to coat or admix with the explosive. Further, it is itself an explosive, and therefore does not detract from, but rather adds to, the explosive power of the material which it coats or with which it is incorporated.

While I have selected as an example of the explosive nitrate of ammonia, I desire it to be understood that my invention is applicable not only to nitrate of ammonia, but to any oxidizing salts which are used in explosives—such as nitrates of the alkalies and alkaline earths, chlorates, perchlorates, &c. It may, in fact, be used with advantage with any explosive which is either hygroscopic or deliquescent. Nor do I intend to limit myself to the proportion of the materials given in this specification, as the same was merely used as an example of proportions which have been and may be used. Nor do I intend to limit myself to the use of any particular one of the group of nitrotoluenes or nitronaphthalenes.

When in the claims I use the term "treated," I intend to include either incorporated or coated.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. An explosive compound comprising nitrate of ammonia treated with a nitronaphthalene and a nitrotoluene.

2. An explosive compound comprising nitrate of ammonia, in which is incorporated a nitronaphthalene and a nitrotoluene.

3. An explosive compound comprising nitrate of ammonia, a nitronaphthalene and a nitrotoluene.

In testimony of which invention I have hereunto set my hand, at Wilmington, Delaware, on this 18th day of October, 1904.

ARTHUR LA MOTTE.

Witnesses:
CHAS. L. REECE,
L. V. BRYAN.