

UNITED STATES PATENT OFFICE.

LÉON THOMAS, OF PARIS, FRANCE.

EXPLOSIVE COMPOSITION.

SPECIFICATION forming part of Letters Patent No. 790,089, dated May 16, 1905.

Application filed February 23, 1904. Serial No. 194,918.

To all whom it may concern:

Be it known that I, LÉON THOMAS, engineer, a citizen of the French Republic, residing at Paris, France, have invented certain new and useful Improvements in Explosive Compositions, of which the following is a specification.

This invention has for its main object to remedy the disadvantages that are inherent to the various kinds of dynamite manufactured at the present time by rendering them uncongealable and insensible to shocks.

The invention consists in using in the manufacture of the various kinds of dynamite solid nitrated derivatives of aromatic compounds, most of which have a melting-point lower than 100° centigrade, such as dinitrobenzene, trinitrobenzene, paranitrobenzene, dinitrotoluene, and trinitrotoluene, and also their isomers. These nitrated hydrocarbons are soluble in nitroglycerin and can be used with advantage in the manufacture of dynamite, the desirable qualities of which they do not alter, while they impart to it new and beneficial properties. They attenuate the excess of sensitiveness of nitroglycerin, and thus render the manufacture, transport, and use of dynamite much safer than hitherto. Thus under the influence of an increase of temperature the explosives obtained by the addition of the aforesaid derivatives to nitroglycerin and dynamite decompose quietly. They resist the shock, for instance, of iron on iron, but are exploded by means of a detonator-cap filled with fulminate of mercury.

A preferred specific composition embodying the features of the invention is as follows: nitroglycerin, fifty; dinitrotoluene, ten, (fusible at 20° centigrade, obtained by mixing dinitrotoluenes made by nitrifying nitrotoluene;) nitrocellulose, 3.5; saltpeter, 30.8; cellulose, 5.5; soda, 0.2.

The influence of the aforesaid nitrated derivatives on the freezing-point of nitroglycerin is remarkable. The freezing-point of commercial nitroglycerin (which is +8° centigrade) may be lowered to -20° centigrade, when some of the isomers of the aforesaid substances are dissolved in nitroglycerin—such as, for instance, dinitrotoluene and tri-

nitrotoluene. A proportion of from five to ten per cent. will secure the desired result.

The aforesaid nitrated hydrocarbons introduced into the explosive have a permanent and effectual action, which is not the case with many of the substances hitherto proposed—such as mononitrobenzene, carbolic and acetic acids, naphthalene, alcohols, and ethers—as these substances have but a temporary action, owing to their volatility, and injuriously affect the principal qualities of dynamite, as they decrease its power and sensitiveness considerably, and the stability of the explosive is injured through the oozing of the nitroglycerin, which oozing is caused by the fluidity and the too active dissolving power of the last-named substances. The aforesaid substances or compounds increase, on the contrary, the explosive power of the explosives containing oxidizing substances, (gelignite,) and their influence is of a permanent nature, owing to the low pressure of their vapors. Moreover, the isomers which I propose to employ are not poisonous like the substances already proposed, which are either poisonous in themselves or become poisonous by setting the nitroglycerin free, as is the case when alcohols and ethers are used.

Having thus described and ascertained the nature of my invention and in what manner it may be performed, I declare that what I claim is—

1. An explosive compound consisting of nitroglycerin, dinitrotoluene, nitrocellulose, saltpeter, cellulose, and soda, in, or about, the proportions mentioned.

2. An explosive compound, consisting of nitroglycerin having admixed therewith dinitrotoluene fusible at 20° centigrade and obtained by nitrifying nitrotoluene, saltpeter, cellulose, and soda.

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

LÉON THOMAS.

Witnesses:

HANSON C. COXE,
PAUL BLUM.