

UNITED STATES PATENT OFFICE.

WILLIAM SIMPSON WINCHESTER, OF CHANUTE, KANSAS.

HIGH EXPLOSIVE.

No. 860,509.

Specification of Letters Patent.

Patented July 16, 1907.

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To all whom it may concern:

Be it known that I, WILLIAM SIMPSON WINCHESTER, a citizen of the United States, and a resident of Chanute, in the county of Neosho and State of Kansas, have invented certain new and useful Improvements in High Explosives, of which the following is a specification.

My invention consists of a new composition of matter in liquid form to be used as a high explosive which shall be stronger than nitro-glycerin, much safer to handle, and practically non-freezing.

My composition consists of the following ingredients combined in the proportions stated and by the process hereinafter described.

Dissolve picric acid (tri-nitro-phenol) 1 part in nitro-benzene (sp. gr. about 1.26) 7 parts. This association of ingredients involves a fall of temperature of 5° F. Of this product dissolve, at a temperature of 86° F. to 204° F., 2½ to 3 parts in nitro-glycerin 96½ to 97 parts. I prefer 96½ parts of nitro-glycerin. This in my belief involves important chemical changes. Assuming, for simplicity's sake, that three parts of the mixed picric acid and nitro-benzene are used to 97 parts of nitro-glycerin, the proportions stated decimally would be—picric acid 0.4. Nitro-benzene 2.6. Nitro-glycerin 97. These ingredients are to be thoroughly mingled by stirring. I then may or may not add gum camphor ½ of one part. The addition of camphor seems to increase the strength as well as increase the insensitiveness of the composition when the other ingredients are used in the above named proportions.

The distinctive qualities and advantages of this explosive are first: that it is stronger than nitro-glycerin. Second: that it is much safer to handle. Third: that it is practically non-freezing, no freezing point having been reached in my tests in any of the ordinary conditions of winter cold descending as low as zero Fahrenheit.

I am aware that nitro-benzene has been combined with nitro-glycerin to slightly reduce the freezing point and possibly picric acid may have been also thus used singly for the same purpose, but in these experiments the freezing point was either very slightly reduced or else the strength of the explosive was greatly reduced. I am not aware that prior to my invention the two ingredients (nitro-benzene and picric acid) have both been used together in the same nitro-glycerin and in the proportions herein described. This secures the important results of greatly reducing the freezing point, increasing the strength of the explosive and at the same time making the explosive much safer to handle.

In the detonation of pure nitro-glycerin, there is an excess of about 3½% of oxygen gas, and in my composition this free oxygen is supplied with carbon and hydrogen, thus giving a more complete combustion or detonation, and thereby increasing the strength of the explosive. This result is accomplished much more readily, thoroughly and perfectly by combining liquids instead of powders or solids.

My compound is a new high explosive to be used as such alone, or as an ingredient in the manufacture of other explosives.

What I claim is—

1. A liquid composition of matter to be used as a high explosive consisting of picric acid, nitro-benzene, and nitro-glycerin compounded in the manner and in about the proportions described.

2. A liquid composition of matter to be used as a high explosive consisting of picric acid, nitro-benzene, nitro-glycerin and gum camphor compounded in the manner and in about the proportions described.

WILLIAM SIMPSON WINCHESTER.

Witnesses:

THOMAS R. EVANS,
DAVID EDWARD MCCLELLAND.