

UNITED STATES PATENT OFFICE.

JULIUS GOETZ, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN EXPLOSIVE COMPOUNDS.

Specification forming part of Letters Patent No. 188,124, dated March 6, 1877; application filed December 4, 1876.

To all whom it may concern:

Be it known that I, JULIUS GOETZ, of the city and county of San Francisco, and State of California, have invented an Improved Explosive Compound; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a novel method of forming explosive compounds, and rendering them safe from accident or explosion under the ordinary circumstances of handling or transportation. It consists in the employment of the glucosides, whether in the form of ordinary molasses or the sirup of glucose of commerce, or any solution of uncrystallizable (grape) sugar when mixed with compounds of gas-producing or explosive substances, and especially when mixed with chlorate of potash, in connection with any combustible substances.

These sirupy solutions, when mixed in suitable proportion with chlorate of potash and other combustible and explosive substances, will form a permanently-plastic mass, the elasticity of which prevents explosion under ordinary circumstances, and requires strong concussion under suitable confinement to explode it.

In order to prepare my compound, I employ any suitable mixtures of explosive, combustible, or gas-producing substances—such as chlorate of potash, charcoal, sulphur, phosphorus, and the picrates—and mix them with my sirupy solution until the proper degree of plasticity is attained.

I do not wish to confine myself in the use of this glucose solution to particular dry admixtures, as it will be manifest that these can be varied according to circumstances. The following may show one form of compound to illustrate my invention: Ten parts chlorate of potash, ten parts glucose in solution, three parts powdered charcoal, two parts powdered sulphur, one part amorphous phosphorus, three parts picrate of lead.

It will be manifest that the proportions of the ingredients may vary, and that the in-

gredients themselves may be replaced by others which are well known as equivalents; but the essential feature of all my compounds will be the employment of the uncrystallized solution of sugar.

To prevent explosion during the time of manufacture the chlorate of potash should be mixed with the glucose first, and the other substances afterward. When manufactured on a large scale a more preferable and perfectly safe way would be to mix the sirup of glucose with about ten times its weight of water, to stir in the ingredients, varying as a greater or less strength is required, and evaporate enough of the water again, at a low degree of heat, until the mass is of a sirupy consistence, in which state it is capable of sustaining all the ordinary shocks of handling or transportation without danger of prematurely exploding. When it comes in contact with fire, and is not confined, it simply burns with a bright light, and comparatively slowly; but it is not consumed with a flash, and does not explode. For the purposes of blasting, for which it is designed, it is necessary to confine it in blast-holes of suitable dimensions, and explode by means of a percussion-cap.

Having thus described my invention, I do not claim, broadly, dry admixtures of explosive substances with chlorate of potash, nor such admixtures as may be made by the use of infusorial or other earths, or fatty or resinous compounds; but

What I do claim as new, and desire to secure by Letters Patent, is—

An explosive compound in which the dry gas-producing or explosive base is mixed with glucose, uncrystallizable sugar, or sirupy solution, for the purpose of preventing premature or accidental discharge thereof.

In witness whereof I have hereunto set my hand and seal.

JULIUS GOETZ. [L. S.]

Witnesses:

O. T. STACY,

WM. H. THOMPSON.