UNITED STATES PATENT OFFICE.

WALTER FRIEDERICH, OF TROISDORF, NEAR COLOGNE, GERMANY.

PROCESS FOR THE MANUFACTURE OF DETONATING CAPS FOR MINING AND MILITARY PURPOSES.

1,424,462. Specification of Letters Patent. Patented Aug. 1, 1922.

No Drawing. Application filed December 15, 1920. Serial No. 431,046.

To all whom it may concern:

Be it known that I, WALTER FRIEDERICH, Ph. D., a subject of the German Republic, and resident of Troisdorf, near Cologne, Germany, have invented certain new and useful Improvements in the Processes for the Manufacture of Detonating Caps for Mining and Military Purposes (for which I have filed an application in Germany, July 27, 1918), of which the following is a specification.

This invention relates to the manufacture of detonating or blasting caps or cartridges for mining and military purposes of the kind which are charged with nitro compounds upon the top of which is placed a priming of lead azide and on the lead azide is placed a loading of fulminate of mercury, a mixture of fulminate and potassium chlorate, picrates, gun powder or other easily inflammable substances.

It has already been proposed to employ plinitroresorcin and its salts as complete or partial substitute for the fulminate of mercury in the above manufacture of blasting caps or other initial fuses (see specification to British Patent No. 20133, A. D. 1900). The results obtained have not been entirely satisfactory.

It has now been ascertained that lead trinitroresorcinate which results when hot solutions of nitrate of lead are mixed together with easily soluble trinitrotesorcinates is an admirable substitute for the fulminate of mercury. The lead trinitroresorcinate employed may contain water of crystallization $C_6H.(NO_2)_3O_2Pb.H_2O$, or it may be dehydrated and the quantity required for one cap varies normally between 0.15 and 0.30 g. The lead trinitroresorcinate may be stored for a much longer time than fulminate of mercury and may even in the damp state be brought in contact with zinc, iron, aluminium or other metals or their alloys without deteriorating or attacking the metals. It explodes without the addition of an oxygen carrier and does not retard the ignition but quickly transmits the flame.

By the employment of lead trinitroresorcinate a blasting cap or cartridge with a firm ignition surface is obtained which is not liable to crumble and yet may be easily ignited by a flame or spark, which is not the case with lead azide, the detonating point of which lies at about 320–330° C, so that its ignition is somewhat difficult. These objects in view are best attained by placing lead trinitroresorcinate on lead azide or mixing it therewith. It may be enclosed in a capsule such as are placed in safety blasting caps upon the initial charge in order to render it more effective in action and safer in handling.

It will thus be obvious that the employment of the lead trinitroresorcinate represents a great technical advance in the art.

The following may serve as examples for charges for detonating or blasting caps according to the improved process.

Example 1: On a main charge of 0.9 g. of tetranitromethylaniline is placed 0.2 g. of lead azide and on this 0.2 g. of lead trinitroresorcinate.

Example 2: On a main charge of 0.7 g. of nitopentaerythrite is placed 0.2 g. of lead azide and on this 0.2 g. of lead trinitoresorcinate.

It will be readily understood that I do not limit myself to the employment of the lead trinitroresorcinate in conjunction with the main charges mentioned or to the proportions stated as these may be varied within the ambit of the claims without departing from the spirit of my invention or sacrificing any of its advantages.

What I claim as my invention and desire to secure by United States Letters Patent is:

1. The process for the manufacture of detonating caps and the like for mining and military purposes which consists in priming the ordinary main charge with lead azide and then placing lead trinitroresorcinate on said lead azide.

2. As a new article of manufacture a detonating cap for mining and military purposes consisting of the ordinary main charge, a priming of lead azide and a loading of lead trinitroresorcinate placed on said priming.

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

DR. WALTER FRIEDERICH.

Witnesses:
JOSEF STEINBRÜGER,
ANTON NORM.