

# UNITED STATES PATENT OFFICE.

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## DETONATING COMPOSITION.

SPECIFICATION forming part of Letters Patent No. 702,357, dated June 10, 1902.

Application filed December 2, 1901. Serial No. 84,463. (No specimens.)

*To all whom it may concern:*

Be it known that I, HANS VON DAHMEN, a subject of the Emperor of Austria-Hungary, residing at Vienna, in the Empire of Austria-Hungary, have invented new and useful Improvements in Detonating Compositions, of which the following is a specification.

It is well known that at present the most generally used explosives—such as dynamite, nitrate-of-ammonium explosives, and those prepared from picric acid, which are employed for mining and military purposes—can only be perfectly detonated by strong preparations of fulminate of mercury. The latter, although they can now be manufactured so as to obviate to a certain extent the danger of explosion, still require most careful handling, since a shock or blow, friction, or fire may immediately cause devastating effects, as is proved by the numerous accidents occurring every year with fulminate-of-mercury preparations in mining and blasting operations.

The object of the present invention is to obviate this danger and to render the use of preparations of fulminate of mercury entirely unnecessary.

In order to completely explode any explosive agent, (for example, picric acid,) several points have to be taken into consideration. It is necessary, for instance, that the body causing the explosion be of approximately the same explosive power as the material to be detonated; further, that the effect of the detonating product and the heat generated thereby, as also the resulting gas-pressure, be so high that detonation can take place.

According to the present invention I employ for the purpose in view copper-ammonium nitrate, potassium nitrate, sulfur, and aluminium, which appear to be the most suitable substances. A good result is obtained, for example, by the use of the following composition, which is characterized by its safety against shocks, blows, friction, and fire: thirty to forty parts copper-ammonium nitrate, forty-two to twenty-five parts nitrate of potassium, ten to seven parts sulfur, eighteen to twenty-eight parts aluminium. To manufacture the detonating composition, these ingredients are intimately mingled in an ordinary mixing-drum for forty-eight

hours. The action of this fulminate may be still further increased by the admixture of any suitable nitrate-of-ammonium explosive, such as that of Favier or that commonly known as "Dahmenit." The proportions observed in this case should be from one-fourth to one-third nitrate-of-ammonium explosive to from three-fourths to two-thirds of the fulminate. A fulminate prepared in this manner possesses the great advantage that it can only take effect in a hermetically-sealed space, so that unforeseen explosions are impossible. A quantity of from two to three grams is sufficient to effect complete detonation of the above-mentioned explosives, such as dynamite, &c. The ignition of this fulminate can be effected direct in a hermetically-sealed space by means of a strong powder fuse or by means of a small nipple-cap.

The imminent danger to which gunners are exposed in handling fulminate-of-mercury preparations is obviated entirely by the use of the new detonating composition, nor is there any risk when the latter is used of shells filled with highly-explosive materials bursting in the gun-barrel.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A detonating composition consisting of a mixture of copper-ammonium nitrate, potassium nitrate, sulfur and aluminium, substantially as described.

2. A detonating composition consisting of a mixture of substantially from thirty to forty parts of copper-ammonium nitrate, forty-two to twenty-five parts of potassium nitrate, ten to seven parts of sulfur and eighteen to twenty-eight parts of aluminium.

3. A detonating composition consisting of a mixture of copper-ammonium nitrate, potassium nitrate, sulfur, aluminium and a suitable nitrate-of-ammonium explosive substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HANS VON DAHMEN.

Witnesses:

ALVESTO S. HOGUE,  
AUGUST FUGGER.