

UNITED STATES PATENT OFFICE.

HUDSON MAXIM, OF NEW YORK, N. Y.

PROCESS OF MAKING CHLORATE BLASTING-POWDER.

SPECIFICATION forming part of Letters Patent No. 512,042, dated January 2, 1894.

Application filed February 19, 1892. Serial No. 422,153. (No specimens.)

To all whom it may concern:

Be it known that I, HUDSON MAXIM, of the city, county, and State of New York, have invented certain new and useful improvements in the manufacture of chlorate blasting-powders or explosive compounds in which chlorate of potash is an ingredient, of which the following is a description.

This invention relates to a preliminary treatment of the chlorate of potash by combining it in a special manner with another oxygen bearing salt or salts prior to its incorporation with the combustible constituents of the said powder.

Chlorate of potash, from the enormous energy developed by it when combining in explosion with combustible elements, has always offered great inducements for the manufacture of blasting powders, but the readiness with which chlorate of potash will give up its oxygen to any combustible substance, as sulphur or carbon, with which it is incorporated, has heretofore rendered the manufacture and use of explosive compounds containing chlorate of potash so eminently dangerous as to practically bar its introduction and use; slight friction or percussion often being all that is necessary to explode most of such compounds. Others have proven to be unsafe from a tendency to spontaneous combustion. To overcome this innate quality of chlorate of potash numerous attempts have been made to lessen the sensitive character of chlorate mixtures by reducing the chlorate of potash to a fine state of division and coating it with paraffine prior to its incorporation with sulphur, charcoal, or other combustible materials, or by mixing the same with some liquid combustible element, as coal tar, which shall in a measure act as a lubricant between the particles of the chlorate to lessen its susceptibility to friction and percussion. Another method has been to prepare the chlorate and ship it separately in cartridges, and to soak these cartridges just before using with nitro benzole or some hydrocarbon oil. All of such methods have proven in practice to be either altogether inefficient in the attainment of the desired results, or to be too tedious to be carried out practically in use.

In carrying out my invention I fuse together chlorate of potash and some other oxy-

gen bearing salt, such as nitrate of soda or nitrate of potash, cool the same and then grind or reduce the combined chlorate and nitrate to a fine state of division before incorporating with the combustible constituents of the powder, as sulphur, charcoal or other equivalent element. This I prefer to do in the following manner: I first melt the nitrate, as nitrate of soda; I then add to the nitrate of soda chlorate of potash, and when the chlorate of potash has fully dissolved or melted in the liquid nitrate, I decant and allow the compound to cool. If chlorate of potash be heated at too high a temperature, it will give off a portion of its oxygen and become chloride of potash; therefore if the chlorate and nitrate be mixed together before melting either of them, or the chlorate be melted first and the nitrate added thereto, danger of loss of oxygen would be incurred. I therefore prefer to proceed in the above manner, although the object of my invention would not be defeated were I to proceed in any of the other ways. I have found that when chlorate of potash and niter are fused together and cooled as above described, the chlorate and niter become very intimately combined—that is, each molecule or particle of the chlorate becomes separated from every other molecule or particle of the chlorate by an intermediate molecule or particle of the nitrate; and the chlorate thus becomes coated or suspended by the nitrate in a much more efficient and intimate manner than would be possible by any other means. I may add one part of nitrate to ten parts of chlorate of potash, or one part of chlorate of potash to ten parts of nitrate, or combine them in equal parts, or in fact in any proportion that may be found in practice to be most desirable; the sensitiveness of the chlorate being lessened in direct proportion to the quantity of nitrate with which it is combined; but I have found equal parts or more of nitrate combined with chlorate, all things considered, to be the most desirable. When the chlorate and nitrate, say in equal parts, are as above combined and pulverized, and mixed with sulphur and charcoal in the usual proportions, as fifteen parts sulphur, ten parts charcoal, to seventy-five parts of the oxygen bearing salts, the same may be triturated

in a stone mortar with a stone pestle without danger of ignition from friction and may be treated or handled in any way with equivalent safety as ordinary black powder in which chlorate of potash is not employed. The explosive compound may be wet and dried without being dangerous, from the efflorescence of the chlorate upon the surface of the particles or grains, as the nitrate being more susceptible to the action of moisture than the chlorate is more active in its efflorescence than the chlorate, thereby still maintaining the safety of the compound from friction or percussion.

What I claim is—

1. In the manufacture of an explosive compound, the process, as herein described, of fusing together chlorate of potash with another oxygen bearing salt such as nitrate of soda or nitrate of potash.

2. In the manufacture of an explosive compound, the herein described process which consists in combining in a state of fusion chlorate of potash and nitrate of soda or potash, then cooling the same and reducing to a fine state of division prior to the admixture of combustible elements.

3. The herein described method of combining chlorate of potash and an oxygen bearing salt, which consists in first fusing the oxygen bearing salt such as nitrate of soda or potash and then adding the chlorate of potash to the fused nitrate.

In witness whereof I have signed my name, in the presence of two witnesses, this 15th day of February, 1892.

HUDSON MAXIM.

Witnesses:

GEO. H. GRAHAM,
N. MARTIN.