

UNITED STATES PATENT OFFICE.

WALTER HARCOURT PALMER, OF PORSGRUND, NORWAY, ASSIGNOR TO MARPAL LIMITED, OF LONDON, ENGLAND.

EXPLOSIVE.

990,585.

Specification of Letters Patent.

Patented Apr. 25, 1911.

No Drawing.

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To all whom it may concern:

Be it known that I, WALTER HARCOURT PALMER, a subject of the King of Great Britain and Ireland, and residing at Porsgrund, Norway, have invented certain new and useful Improvements in and Relating to Explosives, of which the following is a specification.

My invention relates to explosives for blasting purposes and has for its object the production of an explosive which shall not be liable to explode prematurely under shocks or the action of heat or cold and which is not liable to freeze so that the danger which occurs in thawing frozen explosives such as nitroglycerin explosives is avoided.

The invention consists in a blasting explosive containing perchlorate of ammonia, dinitrotoluol and nitrate of soda which are bound together with paraffin wax or other suitable moderating, binding and water proofing material.

The invention further consists in the improved explosive hereinafter described.

In carrying my invention into effect according to one example I make a mixture containing 50 per cent. of perchlorate of ammonia, 14 per cent of dinitrotoluol and 31 per cent. of nitrate of soda or its equivalent and incorporate therewith 5 per cent. paraffin or other hard wax, that will not melt under 120° Fahrenheit which will have the effect of holding the constituent parts in position, keeping the composition of the mixture constant and also serving to protect the explosive from decomposition by the effects of air and moisture, thereby making the explosive perfectly constant. The wax is used for the purpose of keeping the particles properly mixed and nullifying the effect of the specific gravity of the component parts.

The method of mixing the ingredients is as follows:—The perchlorate of ammonia and nitrate of soda are thoroughly ground together until they are in an extremely fine powder. The paraffin wax and dinitrotoluol having been melted together are slowly run on to the mixed perchlorate and nitrate and

the mixing is continued until all the ingredients are thoroughly incorporated. The grinding and incorporating operations can be carried out in the usual plant for grinding and mixing ordinary black powder. The ingredients thus prepared can be used either in fine powder or in granulated form.

The proportions of the various ingredients above given may be varied according to the application for which the explosive is required, and their ratio may be varied according as to whether a quick or slow explosive is required. Thus, where an exceptionally quick explosive is needed the following proportion of the various ingredients are suitable. 70 per cent. perchlorate of ammonia, 13 per cent. dinitrotoluol, and a nitrate of an alkali metal that is to say, 10 per cent. nitrate of soda, or its equivalent of nitrate of potash, 7 per cent. paraffin wax.

I find that my improved composition is cheap to manufacture and produces an explosive of great power which will not leave noxious fumes and is therefore especially suitable for use in mines and other closed places. Also the explosive is safe from premature explosion by shocks or heat. The new composition also is non-hygroscopic and may be used in wet or dry work and does not freeze even at 80° below zero.

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

An explosive composition containing the following ingredients in substantially the proportions given:

Perchlorate of ammonia	50 per cent.
Dinitrotoluol	14 per cent.
Nitrate of soda	31 per cent.
Paraffin wax of melting point above 120° F	5 per cent.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER HARCOURT PALMER.

Witnesses:

A. LAZENBY,

ALBERT EDWARD PARKER.