

UNITED STATES PATENT OFFICE.

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EXPLOSIVE COMPOSITION.

SPECIFICATION forming part of Letters Patent No. 794,583, dated July 11, 1905.

Application filed August 27, 1904. Serial No. 222,422.

To all whom it may concern:

Be it known that I, HAROLD BOYD, mining engineer, a subject of the King of Great Britain, residing at 18 Gillingham street, in the county of London, England, have invented certain new and useful Improvements in and Relating to the Manufacture of Explosive Compositions, of which the following is a specification.

This invention relates to explosive compositions of the kind in which nitrate of soda is employed as the oxygen-bearing body or chief ingredient. As is well known, the difficulty in the use of this nitrate arises from the fact that it is extremely hygroscopic, so that explosive compositions in which it exists cannot be always depended upon unless their use is limited to countries having a uniformly-dry climate. For an explosive composition to be of great utility it must, however, be able to resist all sorts of climatic influences without deterioration, so as to be equally well suited to a hot and dry climate as to a cold or humid climate.

It is the chief object of my invention to enable an explosive composition in which the above-stated nitrate is used as the chief ingredient to be manufactured in such a manner that the hygroscopic nature of the nitrate will be restrained from asserting itself, with the result that the explosive composition will be able to resist the climatic influences aforesaid and will be suitable for use in any country. I accomplish this object by treating the nitrate of soda with suitable substances that will have the effect of rendering the granules damp-resisting and that will not detrimentally affect the function the nitrate performs in relation to the other ingredients with which it is mixed to make the explosive composition, but, on the contrary, will when the composition is fired supply or aid in supplying gases that are necessary or useful in obtaining good explosive effects.

In manufacturing my composition I prefer to proceed as follows: I first mix with the nitrate of soda approximately equal proportions of powdered resin and powdered or finely-divided naphthalene, the proportion of the resin and of the naphthalene relatively to the nitrate being about one-third. These substances are thoroughly mixed together in a powder-in-

corporating mill of any appropriate kind for about half an hour, during which operation the mixture is sprayed or sprinkled with petroleum or similar hydrocarbon, which has the physical effect of causing the mixture to assume a stiff pasty or semiplastic condition. Suitable sprinkling hydrocarbons may be prepared by mixing together one part of petroleum and one part of coal-tar or by mixing one part of Stockholm tar and one part of oil of turps. I then remove the mixture from the incorporating-mill and add to it powdered petroleum-shale and powdered sulfur, the petroleum-shale being in about the proportion of one-half of the nitrate and the sulfur in about the proportion of one-third thereof. The mixture is then remilled for about one hour, after which the said mixture may then be granulated or compressed into cartridges in accordance with requirements. In place of the naphthalene I may employ in some cases Cannel coal or charcoal.

The above-stated explosive composition will be simple to manufacture, safe to use, and cheap to sell, and, moreover, it will be capable of being fired with an ordinary fuse—that is to say, without the use of a detonator.

The following proportions of the ingredients for the composition will be found to give satisfactory results, although I wish it to be understood that I do not confine myself precisely thereto: nitrate of soda, thirty-five parts; resin, ten parts; naphthalene, ten parts; petroleum-shale, fifteen parts; sulfur, ten parts.

Having thus fully described my invention, what I claim is—

1. An explosive comprising nitrate of soda which is rendered damp-resisting by powdered resin and powdered naphthalene and containing petroleum-shale.

2. An explosive composition of which the ingredients are mainly composed of nitrate of soda, resin, naphthalene, petroleum-shale and sulfur.

In testimony whereof I have hereunto set my hand, in presence of two subscribing witnesses, this 16th day of August, 1904.

HAROLD BOYD.

Witnesses:

T. SELBY WARDLE,
GEORGE ISAAC BRIDGES.