

UNITED STATES PATENT OFFICE.

WILLIAM P. FERGUSON, OF BROOKLYN, NEW YORK, ASSIGNOR TO
STEPHEN R. BRANCH, OF SAME PLACE.

BLASTING COMPOUND.

SPECIFICATION forming part of Letters Patent No. 598,064, dated January 25, 1898.

Application filed December 5, 1895. Serial No. 571,151. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM P. FERGUSON, a citizen of the United States, residing at Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Blasting Compounds, which are fully set forth in the following specification.

My invention relates to improvements in blasting compounds which require the concurrence of heat and shock to produce the explosion and in which an oxidizing agent is covered by a film composed of dinitrophenol, trinitrophenol, otherwise known as "picric acid," dissolved in a hydrocarbon or nitrohydrocarbon. The forms of such blasting compounds heretofore made are subject to two objections: First and chiefly, that the hydrocarbons or nitrohydrocarbons employed, being of a very dense nature, do not readily transmit the shock necessary to produce the explosion, and the resulting compounds are therefore less sensitive than sometimes desirable for such purposes; secondly, in the handling of the compound in use, the trinitrophenol (picric acid) or dinitrophenol tends to produce persistent stains. Both these objections are removed and the waterproof quality of the compound is increased by my invention, in which carbon in finely-subdivided form, preferably in the form of lampblack, is employed to lighten the compound and render it more sensitive, said ingredient having also the quality of absorbing the picric acid or the dinitrophenol to the extent that its tendency to stain is substantially obviated, and the further quality of resisting moisture.

The preparation of the compound is as follows: The hydrocarbon or nitrohydrocarbon—such as naphthalene, benzol, nitrobenzol, resin, paraffin, toluol, nitrotoluol, &c.—being liquid, the resin or paraffin, if employed, being melted, a quantity of dinitrophenol or trinitrophenol, commonly called "picric acid," is dissolved therein. To the mixture thus produced the oxidizing agent and lampblack are added and the whole thoroughly intermixed. Nitrates or chlorates of potash, soda, ammonia, &c., are suitable for the oxidizing agent, and the quantity employed

should be sufficient to oxidize the carbonaceous matter which the mixture contains when such chemical action is brought about by the exploding shock. In this process of intermixture the particles of the oxidizing agent become inclosed in films of the dinitrophenol or the picric acid and hydrocarbon or nitrohydrocarbon and lampblack.

One formula for making this compound may be substantially as follows: nitronaphthalene, eight per cent.; dinitrophenol or picric acid, without distinction, eight per cent.; from eighty to eighty-three per cent. nitrate of ammonia, and one to four per cent. lampblack. To the nitronaphthalene mentioned will be added the dinitrophenol or picric acid, which will be rapidly dissolved, and when this process is completed, the temperature being such as to maintain the mixture in liquid condition, the nitrate of ammonia and lampblack are added and thoroughly intermixed.

Another formula may be dinitrobenzol, fifteen per cent.; dinitrophenol or picric acid, without distinction, twenty-five per cent.; nitrate of soda, fifty-six to fifty-nine per cent., and lampblack one to four per cent., the dinitrobenzol being liquid, and the dinitrophenol or picric acid is dissolved therein, the liquid condition being maintained while the nitrate of soda and lampblack are added and thoroughly intermixed. The quantity of nitrate of soda and lampblack specified is that which is necessary to absorb all the liquid and produce a substantially dry mass. The quantity of lampblack used will be varied according to the degree of sensitiveness desired and the proportions above mentioned need not be strictly followed.

The use of lampblack in this invention is to be distinguished from its use in compounds in which it is the carbonaceous element whose rapid oxidation is the method of explosive action and in which its function is to afford food for the oxidizing agent to produce such action. The function of the lampblack in this invention is not to increase the carbonaceous food for the oxygen, but only to lighten the carbonaceous film, making it more sensitive to the shock and to neutralize the staining tendency of the picric acid. The lampblack

may, no doubt, be oxidized in the process of explosion, and in this it may possess advantage over a substance which could not be oxidized merely because thus no solid residuum results from its use; but such oxidation, if it occurs, is incidental and not part of the function of the lampblack in the compound.

The function of lampblack is precisely the same whether the coating upon the oxidizing core of the granular contains picric acid or dinitrophenol, or whether it contains hydrocarbon or nitrohydrocarbon, the picric acid and dinitrophenol being equivalents and the hydrocarbon and nitrohydrocarbon being also equivalents so far as the function of lampblack is concerned or affected. In my claims, therefore, by the term "a nitrophenol" I intend to include both dinitrophenol and trinitrophenol or picric acid.

I claim—

1. In a blasting compound in which the oxidizable element consists of a film made up of a combination of a nitrophenol and a hydrocarbon, the combination of lampblack in said film intermixed with said elements thereof, as and for the purpose set forth.

2. In a granular blasting compound in which the oxidizing agent in each granule is coated with a film containing a nitrophenol and a hydrocarbon, the combination of lampblack in said film intermixed with said elements thereof: substantially as set forth.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 3d day of December, 1895.

WM. P. FERGUSON.

Witnesses:

CHAS. S. BURTON,
JEAN ELLIOTT.