

UNITED STATES PATENT OFFICE.

FREDERICK A. ABEL, OF LONDON, AND JAMES DEWAR, OF CAMBRIDGE,
COUNTY OF CAMBRIDGE, ENGLAND.

NITRO-GELATINE EXPLOSIVE.

SPECIFICATION forming part of Letters Patent No. 409,549, dated August 20, 1889.

Application filed June 20, 1889? Serial No. 314,997. (No specimens.)

To all whom it may concern:

Be it known that we, FREDERICK AUGUSTUS ABEL, knight, and JAMES DEWAR, professor of chemistry, citizens of England, residing, respectively, at No. 1 Adam Street, in the city of London, England, and at No. 1 Scroop Terrace, Cambridge, in the county of Cambridge, England, have invented a new and useful Improvement in Explosives for Ammunition, of which the following is a specification.

The explosives known as "blasting-gelatine," consisting chiefly of nitro-glycerine with nitro-cellulose dissolved in it, sometimes accompanied by other ingredients, are well adapted for blasting purposes, owing to the disruptive character of their explosion; but they are not suitable as constituents of ammunition, for which explosions of a propulsive rather than of a disruptive character are required.

It has been proposed to add to the ingredients of blasting-gelatine bodies of an inert kind—such as camphor—in order to lessen the rapidity of the combustion, and thus render the explosive available for propulsive purposes; but if such inert matter added is of a volatile character or otherwise liable to change in quantity or condition, the quality of the explosive of which it forms a part is not sufficiently permanent to be relied on for storage or use.

Our invention relates to means of treating blasting-gelatine, whether it be simple or compounded with substances which are sometimes added to it—such as nitrates of hydrocarbons of a non-volatile character—in such a manner as to render it available for ammunition, which we effect in the following manner: Blasting-gelatine, manufactured in the ordinary way, but with a greater percentage of soluble nitro-cellulose and with volatile solvent—such as acetone or acetic ether—sufficient to give it the consistence of a moder-

ately thick jelly, or ordinary blasting-gelatine with the addition of soluble nitro-cellulose and solvent to bring it to a like condition, is pressed through holes in a plate so as to form a number of wires, which may be of various sizes, such as one-eighth of an inch diameter, more or less. These wires, which at first are soft and pliable, become toughened by evaporation of the solvent. They are cut into lengths, which are packed side by side in the shells of cartridge-cases, forming bundles or sheaves of explosive wires, which by their combustion produce great propulsive effects. The rapidity of combustion of such ammunition may be varied within wide limits by varying the size of the gelatine wires of which it consists, a bundle of wires of small diameter burning more rapidly than a bundle of wires of larger diameter.

Having thus described the nature of our invention and the best means we know of carrying the same into practical effect, we claim—

An explosive for ammunition manufactured by pressing blasting-gelatine or compounds thereof through holes to form wires, cutting these wires into suitable lengths, and packing them in cartridge-cases, substantially as described.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 5th day of June, A. D. 1889.

F. A. ABEL.
J. DEWAR.

Witnesses:

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