

# UNITED STATES PATENT OFFICE.

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## EXPLOSIVE COMPOUND.

SPECIFICATION forming part of Letters Patent No. 242,783, dated June 14, 1881.

Application filed March 1, 1881. (No specimens.) Patented in Belgium November 13, 1880.

To all whom it may concern:

Be it known that I, JOHN MALCOLM LEWIN, of Paris, in the Republic of France, have invented a certain new and useful Improvement in Explosive Compounds for Blasting and other Purposes, of which invention the following specification is a full description.

This invention relates to that class of compositions which contain nitro-glycerine in combination with other materials; and it consists in an improved composition called "forcite." This composition is produced by incorporating with nitro-glycerine cellulose and niter or salt-peter; the result being a compact and plastic mass. Under some circumstances a large portion of the cellulose can be replaced by dextrine.

Heretofore nitro-glycerine has been reduced to a gelatinous mass by dissolving gun-cotton or nitro-cellulose therein, and niter has been incorporated in such mass.

In the present invention neither gun-cotton nor other form of nitro-cellulose is required, but the cellulose is used in an unnitrated condition.

In order to carry the invention into effect, cotton or other form of cellulose is treated alternately with alkalis and acids, as in the cleaning of paper-stock, or in any ordinary or suitable way, in order to remove foreign materials and leave pure cellulose. This is then reduced to powder by a picker or grinding-cylinder, and is subjected in a close vessel to the action of high-pressure steam until the reaction takes place by which the cellulose is converted into a gelatinous mass. At this moment the operation is stopped, the gelatinous mass obtained (which can be preserved indefinitely under water) is allowed to cool, and is then dissolved in or thoroughly and uniformly incorporated with nitro-glycerine, the result being a sort of jelly. The solution or incorporation is effected by the aid of heat. A temperature of 40° centigrade is suitable, and can easily be obtained by a water-bath in which the water is heated to, say, 90° centigrade. Niter is incorporated with the nitro-glycerine and gelatinized cotton described to form the new explosive—forcite.

The proportions may vary. One of the best compositions is nitro-glycerine, seventy-five; gelatinized cotton, seven; and niter, eighteen.

Dextrine can be used instead of a large part of the gelatinized cellulose. In such cases the following composition is preferred: nitro-glycerine, seventy; gelatinized cellulose, one; dextrine, five; niter, fifteen; ordinary cellulose, nine.

The ordinary cellulose is or may be in the form of powder.

Forcite thus prepared is a plastic mass having power of nitro-glycerine, and being attended in its making, carrying, and keeping with less danger than explosive compounds before known, and even than "blasting" or "mining" powder, properly called. It has the remarkable and most advantageous property of exploding when confined or charged in a drill-hole, as well by the action of special primers or caps as by ordinary fuses, and of burning without explosion in the open air. Its manufacture is less costly than other compositions of nitro-glycerine. The nitro-glycerine is so perfectly united with the other materials that it is not separated by sulphuric ether or alcohol, and that water has no action upon it. The nitro-glycerine therefore preserves its properties without alteration, even under water.

I claim—

1. An explosive composition, as described, being a pasty mass comprising nitro-glycerine, and cellulose and niter incorporated with the nitro-glycerine, substantially as set forth.

2. A plastic gelatinized nitro-glycerine compound, comprising, in combination with nitro-glycerine, an inexploding gelatinizing material and an oxidating salt, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN MALCOLM LEWIN.

Witnesses:

PAUL CLEIS,  
CHARLES MARDELET.