

UNITED STATES PATENT OFFICE.

ORLANDO B. HARDY, OF AKRON, OHIO.

IMPROVEMENT IN BLASTING-POWDER.

Specification forming part of Letters Patent No. **220,534**, dated October 14, 1879; application filed June 6, 1879.

To all whom it may concern:

Be it known that I, ORLANDO B. HARDY, of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Blasting-Powder; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it.

My invention relates to blasting-powder, and consists of the compound hereinafter described and claimed.

My powder has the peculiarity of not igniting by percussion, and of being perfectly safe in storing and in handling. Its dynamic effect is far superior to ordinary mining-powder, and is fully equal to that description popularly known as "Giant" and "Hercules" powder, while it contains the advantages of cheapness and non-explisibility in the open air. It has to be confined substantially air-tight to be explosive. It produces less smoke than any other powder of which I am aware, and its smoke is less offensive and injurious.

To make my powder, take crude nitrate of soda, sulphur, charcoal, common salt, sugar, and paraffine, or their equivalents, and mix them as follows: In making one hundred and thirty-three pounds of my powder, take of crude nitrate of soda, say, seventy-five pounds in weight, of sulphur twenty pounds, of charcoal twenty pounds, of common salt ten pounds, of sugar five pounds, and of paraffine three pounds. Of course, these proportions may be more or less varied to suit special requirements; but a powder made according to the above recipe will perform a useful purpose.

To compound the above ingredients in making my power, take the crude nitrate of soda, sugar, and salt and dissolve them together in water, boiling this solution to the consistency, say, of thick mush, the paraffine being added thereto; then remove from the fire and add the charcoal and sulphur, which should have been previously pulverized and mixed together. By this addition the mass is suffi-

ciently dried for "kerneling." Now, in this state fit for kerneling, the powder may either be granulated by being passed through suitable screens sized for the grade of powder to be produced, or the powder may be pressed or molded into cylinders, sticks, or cartridges of suitable size, shape, and weight for the varying requirements of mining, quarrying, and blasting.

When put up into sticks or cylinders, as just above specified, the granulating or kerneling process is, of course, omitted, and the powder is in the condition of a solid lump or mass, sufficiently solid and tenacious of itself to withstand ordinary handling, thereby not requiring a shell or any sustaining wrapper.

An important advantage obtained by my powder is that it may be exploded by means of the common fuse, not requiring the use of caps, primers, or the like, as is frequently the case in other powders.

As before suggested, a peculiar property of my powder is the fact that its dynamic effect is only produced when it is burned in a confined and substantially air-tight cavity, whereas it burns slowly, safely, and without any explosiveness whatever in the open air. My object in using salt is to produce this non-explisibility in the open air; and sugar or other suitable binder is employed to increase the solidity of the finished product, whether it is used in granulated or stick form.

This powder does not undergo any decomposition during an indefinite period of storage, and is thereby good for any length of time.

What I claim is—

A blasting-powder composed of nitrate of soda, sugar, salt, charcoal, sulphur, and paraffine, in the parts and proportions substantially as set forth.

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

ORLANDO B. HARDY.

Witnesses:

L. L. LEGGETT,
JNO. CROWELL, Jr.