

UNITED STATES PATENT OFFICE.

FRANK H. BRIGGS, OF ELYRIA, OHIO, ASSIGNOR TO THE AMERICAN DYNALITE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

EXPLOSIVE.

975,825.

Specification of Letters Patent.

Patented Nov 15, 1910.

No Drawing.

Application filed April 29, 1909. Serial No. 492,832.

To all whom it may concern:

Be it known that I, FRANK H. BRIGGS, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented a certain new and useful Improvement in Explosives, of which the following is a full, clear, and exact description.

The object of this invention is to produce an explosive which is somewhat cheaper pound for pound than that explosive which forms the subject matter of my prior application, Serial No. 358,080; and an explosive whose characteristics may easily be varied so as to adapt it to different specific uses.

The invention consists in the explosive compound hereinafter described and in the process of compounding the same as hereinafter described and definitely pointed out in the claims.

In preparing the said explosive there is used as the base or foundation substantially the same explosive compound which forms the subject matter of said prior application—that is to say, in its best form it is an intimate mixture of chlorate of potash, mirbane oil and a pulverized mineral inert absorbent of the oil—preferably pulverized slate. These ingredients are preferably used in about the proportion of 112 pounds chlorate of potash, 35 pounds of mirbane oil, and 24 pounds of pulverized slate. These proportions may, however, be varied to a considerable degree and are not made essentials of the compound herein claimed. Neither is it essential that pulverized slate be used, because other pulverized inert minerals will serve a similar purpose, although as far as I know not to a like degree. That is to say, I know of no other material which will absorb as much mirbane oil and will in like degree permit its volatilization. This compound is being extensively used and is made and sold under the name of dynalite. It has many desirable qualities which commend it for use, but its cost has in some degree been an obstacle to its more general introduction. I have discovered, however, that if to this base compound, nitrate of potash be added to an amount not exceeding twenty per cent. of the weight of the base compound, the resulting compound is an explosive whose qualities are almost exactly those of the base compound; and since this nitrate of potash costs very much less per pound than the

chlorate or the mirbane oil, it is obvious that by the addition of the nitrate of potash we produce a considerably cheaper explosive. If an amount of nitrate of potash in excess of twenty per cent. of the base compound be added, some changes in the quality of the compound results. That is to say, it acts more slowly and produces heaving or propulsive rather than shattering results in about the proportion of the increase of the nitrate. A very good but slow acting and highly propulsive explosive compound may be produced by adding fifty per cent. by weight of nitrate of potash to the base compound. If the amount of nitrate added much exceeds fifty per cent. the resultant compound becomes too uncertain and slow of action to have much practical value.

The addition of powdered charcoal to the described compound increases its elasticity, still further decreases its quickness of shooting and makes the mass more pliable, and aids in preventing it from solidifying when exposed to low temperatures. The amount of charcoal which may be so used to practical advantage will vary from one per cent. in the quick acting explosive—that is, that which has the smallest percentage of nitrate of potash,—to fifteen per cent. in the slowest acting explosive, namely, that which has the greatest percentage of the nitrate of potash. One thing is to be observed, however, namely, that a satisfactory explosive cannot be produced by mixing together at the same time the chlorate of potash, the nitrate of potash, the mirbane oil and the powdered slate. It is necessary that the oil and chlorate shall be mixed so that the chlorate particles shall be coated with the oil and that thereafter the powdered slate shall be added to absorb the excess of oil. Thus there is produced the base compound. The nitrate and the charcoal must be added to this base compound after it has been prepared. If added otherwise a satisfactory explosive is not produced, nor one whose qualities can be predicted before use.

The nitrate of potash is used to increase the quickly available quantity of oxygen in the mass; and the carbon is used to increase the quickly available carbon in the mass. The appended claims are intended to be inclusive of explosive compounds which employ equivalents of said nitrate and charcoal; although I believe that the two mate-

rials specified are the best for the described purpose, having regard not only for their chemical effect but their cost as well.

Having described my invention, I claim:

- 5 1. An explosive compound consisting of an intimate mixture of chlorate of potash, mirbane oil, pulverized slate, and nitrate of potash, in substantially the stated proportions.
- 10 2. An explosive compound consisting of an intimate mixture of chlorate of potash, mirbane oil, pulverized slate, nitrate of potash, and powdered charcoal, in substantially the stated proportions.
- 15 3. The herein described process of producing an explosive which consists in first making an explosive compound by mixing chlorate of potash and mirbane oil together,

and then adding a pulverized inert absorbent mineral, and in then adding to this mixture 20 nitrate of potash, substantially as specified.

4. The herein described process of producing an explosive which consists in first making an explosive compound by mixing chlorate of potash and mirbane oil together, 25 and then adding a pulverized inert absorbent mineral, and then adding to this mixture nitrate of potash and charcoal, substantially as specified.

In testimony whereof, I hereunto affix my 30 signature in the presence of two witnesses.

FRANK H. BRIGGS.

Witnesses:

L. D. HAMLIN,
A. E. LAWRENCE.