

UNITED STATES PATENT OFFICE.

JESSE B. BRAUNSTEIN, OF ALLENTOWN, PENNSYLVANIA.

EXPLOSIVE.

No. 868,637.

Specification of Letters Patent.

Patented Oct. 22, 1907.

Application filed May 27, 1907. Serial No. 376,003.

To all whom it may concern:

Be it known that I, JESSE B. BRAUNSTEIN, a citizen of the United States, and a resident of Allentown, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Explosives, of which the following is a specification.

My invention relates to the manufacture of that class of commercial explosives in which non-explosive materials, oxidizing or wholly inert, are added to the explosive base either to moderate the action of the latter or to insure its complete combustion and the object of the invention is to provide for such purpose a non-explosive material which so far as I am aware has not heretofore been used and which, I have discovered, has marked advantages over the agents which are in common use for said purpose.

For many uses to which explosives are put in the arts, and particularly for blasting, it is customary to moderate the violence of explosion by reducing the percentage of the explosive base in a given mass or charge of the commercial explosive, and the percentage of explosive base to the entire mixture is made to vary according to the particular character of work to be done. The materials added to the explosive base in making up the mixture vary in character, some being entirely inert, and some having the capacity of oxidizing agents where such an agent is required to insure complete combustion of the explosive base.

My invention relates more particularly to the production of blasting powders having nitro-starch as the explosive base. It has heretofore been customary in producing such powders to use as the added material some one or other of the well-known oxidizing agents—usually nitrate of soda. I have discovered however, that the use of an oxidizing agent in such powders is unnecessary and have further discovered that common commercial iron filings or other finely divided metallic particles such, for example, as lead, zinc, and the common commercial alloys can be successfully utilized as the inert moderating material in the production of the nitro-starch explosive mixture, and that when so used it has marked advantages over any other material which, so far as I am aware, has ever been proposed for

such purpose. Not only does the finely divided metal combine the required moderating capacity, with the most desirable weight and density, but I have discovered the remarkable fact that it has a stabilizing influence on the nitro-starch and to a considerable extent it decreases the quantity of smoke generated upon explosion, due to the presence of moderating agents which have heretofore been proposed. It is also needless to say that the cheapness of various sorts of finely divided metal, such as iron filings, is a most important commercial advantage.

In producing a powder in accordance with my invention I prefer to use iron filings and the grade of filings or other finely divided particles of metal used should be such as to permit of an intimate intermixture with the explosive base. I have used with success a grade of filings such as will pass through a forty mesh screen. The percentage of filings used, varies of course with the strength of the charge desired, the grade of these powders varying from 30 to 70%. If for example the powder is to be of the 40% grade, that is, having 40% by weight of explosive base, the balance of the mixture will be metal filings 60% by weight. Where desired to give consistency, a small percentage, say 1½% of a suitable oil may be added, for example cotton seed oil in which case the iron filings would be 58½% by weight. For ordinary purposes I prefer to use an oil in making up the powder and approximately 1½% by weight of oil may be said to be the preferred percentage. The nitro-starch and metal particles are caused to be intimately intermixed by any convenient means.

I claim:

1. An explosive composition consisting of an intimate mixture of substantially from 30 per cent. to 70 per cent. of nitro-starch, and from 70 to 30 per cent. of finely divided iron.

2. An explosive composition consisting of an intimate mixture of substantially from 30 per cent. to 70 per cent. of nitro-starch, and from 70 to 30 per cent. of iron filings.

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

JESSE B. BRAUNSTEIN.

Witnesses:

CHARLES H. HOWSON,
JOS. H. KLEIN.