

# UNITED STATES PATENT OFFICE.

HAROLD BOYD, OF TAMWORTH, ENGLAND.

## BLASTING-POWDER.

SPECIFICATION forming part of Letters Patent No. 622,990, dated April 11, 1899.

Application filed December 31, 1897. Serial No. 665,175. (No specimens.)

*To all whom it may concern:*

Be it known that I, HAROLD BOYD, mining engineer, a subject of the Queen of Great Britain, residing at Fair View, Wigginton, 5 Tamworth, in the county of Stafford, England, have invented certain new and useful Improvements in Explosives, of which the following is a specification.

This invention relates to an explosive mixture or compound which is intended especially for mining purposes, the chief object being to obtain a powerful and safe blasting explosive that can be fired without a detonator and which after firing will not leave behind 15 poisonous or noxious fumes, which are particularly objectionable when using ordinary blasting explosives in confined places. An explosive of this description has been previously patented and issued to me under 20 United States Patent No. 577,351, dated February 16, 1897; but since the date of such patent I have discovered that an explosive of such description can be obtained by mixing together ingredients other than those set forth 25 in the specification of the aforesaid prior patent.

According to my present invention I employ the following ingredients in or about the proportions stated: nitrate of soda, seven 30 parts, by weight; sulphur, four parts, by weight; picrate of ammonia, two parts, by weight; bichromate of potash, one part, by weight; peat-dust, one part, by weight; commercial lime, one to three parts, by weight. 35 The said ingredients are mixed together with cotton-seed oil and compressed into cartridges for general mining purposes.

I do not confine myself to the exact proportions of the ingredients above stated, as 40 such proportions may be varied according to the strength of explosive required. The use of the said explosive is not confined to blasting purposes alone, as it may also be used for ballistic purposes.

45 The peat-dust, which forms one of the ingredients of my compound, serves to prevent friction between the active ingredients and

constitutes what may be termed a "buffer." Such friction might be caused by an accidental shock or jar to the explosive and would 50 but for the buffer bring about an explosion. It has been found that certain explosive mixtures that would explode on any concussion or shock occurring near them will not do so if a proper buffer substance be incorporated 55 with the mixture. Peat-dust has been found to be an excellent substance for the purpose; but I do not care to confine myself to its use, but reserve the right to substitute therefor any other equivalent material, such as saw- 60 dust, fossil-meal, powdered mica, or the like.

The lime employed by me acts as a fume-absorbent; but I may also use Irish bog ore or other hydrated oxide of iron, especially 65 oxide of iron that has been used in the purifiers of gas-works.

What I claim is—

1. A fumeless explosive, consisting of a mixture of nitrate of soda, sulphur, picrate of ammonia, and bichromate of potash. 70

2. A fumeless explosive, consisting of a mixture of nitrate of soda, sulphur, picrate of ammonia, bichromate of potash, and commercial lime.

3. A fumeless explosive consisting of a mixture of nitrate of soda, sulphur, picrate of ammonia, bichromate of potash, and cotton-seed oil. 75

4. A fumeless explosive, consisting of a mixture of nitrate of soda, sulphur, picrate of ammonia, bichromate of potash, peat-dust, 80 and commercial lime, substantially as described.

5. A fumeless explosive, consisting of a mixture of nitrate of soda, sulphur, picrate of ammonia, bichromate of potash, peat-dust 85 commercial lime, and cotton-seed oil, substantially as described.

In testimony whereof I have hereunto set my hand this 15th day of December, 1897. 90

HAROLD BOYD.

Witnesses:

H. B. GREEN,  
W. M. HARRIS.