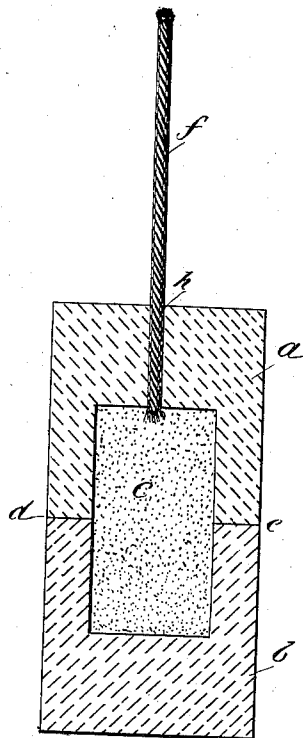


(No Model.)

A. NOBEL.  
Primer for Blasting Charges.

No. 231,348.

Patented Aug. 17, 1880.



WITNESSES:

*C. Newell*  
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INVENTOR:

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ATTORNEYS.

# UNITED STATES PATENT OFFICE.

ALFRED NOBEL, OF PARIS, FRANCE.

## PRIMER FOR BLASTING-CHARGES.

SPECIFICATION forming part of Letters Patent No. 231,348, dated August 17, 1880.

Application filed April 7, 1880. (No model.) Patented in England June 17, 1879.

*To all whom it may concern:*

Be it known that I, ALFRED NOBEL, of Paris, France, have invented an Improved Primer for Compressed Blasting-Powder, of which the following is a specification.

The invention consists in a primer for the ordinary composition of powder when reduced to meal, and thereby adapted to increase the charge in a hole of given size by its compressibility.

In the accompanying drawing I have shown, by a sectional view, a convenient form of primer for exploding charges of the above-described compressed mealed powder.

*a* and *b* are two hollow cylinders of compressed granulated gunpowder with their hollow space *c* filled with dynamite or analogous fulminate or explosive. The two cylinders *a* and *b* are glued together on the line *d e*. A fuse, *f*, is fitted into the hole *h*, and a paper wrapped around the primer is secured to the fuse with a string.

An exploder of this kind fired in a bore-hole on the top of a charge of mealed compressed powder readily sets off the latter. A very suitable primer can also be made by mixing together about equal parts of gunpowder in fine grains and picrate of potash, or bibasic picrate of baryta, or tribasic picrate of lead. They may either be mixed loosely and filled into a small paper cartridge, or be compressed into small cakes of the weight of eight to ten grams each. Such a cake, along with the end of a fuse, is wrapped into a paper, which is secured to the fuse with a string. A primer of this kind, especially if picrate of potash is the vivifying medium, is but slightly sensible to concussion.

The cylinders of mealed gunpowder above referred to should be very highly compressed, so as to obtain great density. The machinery used for compressing gunpowder is too well known to require special description here. In the above-described mealed compressed gun-

powder nitrate of soda or nitrate of baryta, especially the former, may be advantageously substituted for nitrate of potash.

A bore-hole is charged as follows: As many cylinders of compressed mealed powder as needed are put in and pushed home. Over these a primer-cartridge, as hereinbefore described, is introduced. The hole is then tamped and the charge fired.

In very soft and fissured ground it is better to make use of a violent fulminate, such as dynamite, instead of the somewhat slower picrates above referred to.

In the above description I have only alluded, generally, to ordinary mealed gunpowder without specifying its ingredients; but I wish it to be understood that I may use any analogous composition possessing the same property of only fusing and not exploding when compressed in a mealed condition and charged into a bore-hole in that shape.

I also remark that although the compressed mealed gunpowder herein specified constitutes no new composition of matter, yet it becomes practically a new material, or acquires a new property by addition of the fulminate, viz., that of being explosive under conditions where it otherwise would only fuse.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

A primer for mealed powder, consisting of the two cylinders *a b*, glued together on the line *d e*, containing a central filling of dynamite surrounded by granulated powder and provided with a fuse, *f*, passing through the hole *h*, as shown and described.

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

ALFRED NOBEL.

Witnesses:

FRANZ HASSLACHER,  
JOSEPH PATRICK.