

UNITED STATES PATENT OFFICE.

HARRY D. VAN CAMPEN, OF BELMONT, ASSIGNOR TO BYRON ALFORD, OF
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EXPLOSIVE COMPOUND.

SPECIFICATION forming part of Letters Patent No. 288,516, dated November 13, 1883.

Application filed August 14, 1882. (Specimens.)

To all whom it may concern:

Be it known that I, HARRY D. VAN CAMPEN, a citizen of the United States of America, residing at Belmont, in the county of Allegany and State of New York, have invented certain new and useful Improvements in Explosive Compounds, of which the following is a specification.

My invention relates to an improved explosive compound to be used for blasting and other purposes, in which nitro-glycerine is combined with other materials to form an explosive that is safe to handle, will not accidentally explode under ordinary circumstances, although it will exert a tremendous force when exploded in the proper manner, and will not leave noxious fumes behind it after explosion.

Many objections have been found by those using any and all of the nitro-glycerine compounds heretofore invented. It has been found that the noxious vapors resulting from the explosion prevents their use, as the smell of the vapors for two hours will often make a strong man so sick as to compel him to keep his bed for days. Besides, the absorbents heretofore used are such as will not permanently hold the nitro-glycerine, so that some of the latter partially separates from the absorbent, and thus returns to its natural condition, when the least tap or jar on the vessel containing it may result in a fearful explosion. Another objection with many of the compounds is that some of the materials, when in contact with the nitro-glycerine and kept in store some time, gradually decay, and by generating heat result in an explosion. All of the above objections I avoid in my compound, as I have proved by a long series of experiments and practical use.

In making my compound I use the following ingredients, and in about the proportion stated below: pulverized tan-bark, fifty parts; dextrine, ten parts; cryolite, five parts; potassium nitrate, fifteen parts; nitro-glycerine, twenty parts; total, one hundred parts. The dextrine, cryolite, and potassium nitrate should be reduced to a fine powder. The tan-bark I prefer to grind very fine, also; but it is not actually necessary to make it very fine or to sift it, as pieces the size of a bean would not do any harm. These four ingredients I mix thoroughly in a wooden vat which

holds about one thousand pounds of the compound, and then slowly turn on the nitro-glycerine, stirring the whole together until the proper quantity of the nitro-glycerine has been mixed with the other ingredients, when I thoroughly work the whole together, as one would mix mortar, until the whole compound becomes a homogeneous pasty mass which is entirely safe to handle, as it can hardly be exploded unless by the aid of a percussion-cap or some similar means. While yet in a soft pasty condition I pack it in tin cartridge-cases, in which condition it is ready for use, or it can be transported for any distance with perfect safety.

The advantages of the materials I use as absorbents with the nitro-glycerine I believe to be the following: The tan-bark forms a cheap yet good absorbent. The dextrine, when dampened with the liquid, forms a kind of cement, which by standing only becomes dryer and holds together the compound. It thus serves to hold the nitro-glycerine and prevent it from settling to the lower part of the compound after standing a while, which is a serious objection in the compounds of this class heretofore in use, as such settlement impairs the uniformity of the compound and renders it dangerous to handle. Moreover, the dextrine is entirely consumed by the oxygen of the potassium nitrate along with tan-bark, thus materially adding to the explosive power; while at the same time, by aggregating the mass, it modifies the explosive power of the compound, rendering it less percussive in action, and enhancing its lifting or rending force. The cryolite, when dampened with the liquid, also acts, like the dextrine, as an adhesive material, helping to unite and dry the other materials when kept long in store, and besides this its absorbing capacity is so great that a pound cartridge of which this material forms a part will, I believe, be smaller than a cartridge formed of any other compound having a similar quantity of nitro-glycerine. The potassium nitrate has a preservative effect on the other materials, and prevents any tendency to decay.

I prefer to mix my ingredients in about the proportions specified, but do not limit myself to them, as they may be varied considerably without departing from the spirit of my invention.

I sometimes slightly carbonize the tan-bark; but from the effect produced by the tannin in the explosion I prefer to use without carbonizing it, and in its original unleached condition, although I frequently heat it almost to the point of carbonization.

I do not claim to be the first to combine with nitro-glycerine absorbing materials that will act as explosives when fired, and I am aware that the majority of the substances described have been in use heretofore, and therefore I do not claim such, broadly; but

What I claim as new is—

An explosive compound consisting of tan-bark, dextrine, cryolite, potassium nitrate, and nitro-glycerine, substantially as described, and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 14th day of August, 1882.

HARRY D. VAN CAMPEN.

Witnesses:

W. T. JOHNSON,

W. T. ROBERTSON.