

UNITED STATES PATENT OFFICE.

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EXPLOSIVE.

981,969.

Specification of Letters Patent.

Patented Jan. 17, 1911.

No Drawing.

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To all whom it may concern:

Be it known that I, VICTOR L. BEDIER, a native-born citizen of the United States of America, residing at 2433 1/2 Seventh avenue west, in the city of Seattle, in the county of King and State of Washington, have invented a new and useful Explosive, of which the following is a specification.

This invention relates to explosives.

The object of the invention is to provide an explosive which will have a pronounced and permanent color, which will leave little or no residue after explosion, and which shall present a highly glazed product, that will render the explosive non-hygroscopic, thus to prevent deterioration.

With the above and other objects in view as will appear as the nature of the invention is better understood, the same consists in the novel explosive compound, hereinafter described and claimed.

In carrying out my invention, the following ingredients are combined in substantially the proportions stated namely: powdered potassium chlorate 736 oz., commercial cane sugar 480 oz., commercial hard wheat bolted flour 320 oz., chrysophanic acid 2 oz., curcuma 1 oz., denatured alcohol 30 oz., water, substantially pure, 120 oz. The above proportions of parts are sufficient to produce 96 pounds of my compound and are the units of its manufacture.

The compound is produced by the mingling of the above mentioned component parts in the ratios stated in the following manner, to-wit: First: The chrysophanic acid, curcuma, and the denatured alcohol are mixed thoroughly together by agitation, allowed to rest for four hours, and then filtered for the removal of all residue that is insoluble, the solution being composed of chrysophanic acid, and curcumin, the coloring principle of curcuma. Second: The flour and powdered potassium chlorate are mixed in their dry state by thoroughly stirring together, or by passing through a screen or sieve. Third: The crystalline carbohydrate, in this instance cane sugar, is dissolved in the water and boiled for fifteen minutes. Fourth: The alcoholic solution of chrysophanic acid and curcumin is added to the sugar and water solution while the latter is hot, care being taken to keep the same from contact with flames. Fifth: To the flour and potassium chlorate compound this final solution is added by stirring it into the same while con-

tained in a suitable vessel provided for that purpose, the stirring being continued until the compound presents a smooth mass. Sixth: When this last formed composition has been brought to the proper consistency and smoothness and while the same is still warm, it is passed through one of the wire screens or sieves hereinafter described by rubbing it through the meshes thereof, thereby separating the mass into granules which are caught on canvas or cloth frames over which they are spread. Seventh: The frames containing the granules are then placed in a room, and with or without artificial heat the granules are permitted to dry, thus completing the procedure and presenting the explosive in marketable form and ready for use.

The screens or sieves, above referred to are made of galvanized wire mesh or screen wire of from four (4) to twenty (20) meshes to the square inch, and different sized meshes are used because it is a well known fact that the larger the granules of the explosive, the slower will be the explosion, and the greater the lifting power. Hence the result to be obtained by the use of the various size meshes of the screens or sieves is to form granules in such varied sizes as that the explosion of the same may be retarded or quickened in accordance with the particular purpose for which the explosive is being used.

This explosive is smokeless and odorless, and is to be exploded with fuse and fulminating mercury cap, or by an electric cap and battery when used for blasting purposes, or as a lifting or breaking agent, and for use in ordnance and fire arms of all kinds, and is loaded and fired in the same manner as ordinary gun powder.

The curcumin is not similar in its effect to the chrysophanic acid, but it gives a permanent color to the compound in association with its other ingredients; and to obtain a uniform indelible color is one of the reasons of its use therein. It is furthermore employed because of the property it has, when mixed with the chrysophanic acid, of causing the granules to become coated or glazed thus to prevent adhesion and further to render the product non-hygroscopic when fully dried. A further effect of the curcumin on the compound is to impart thereto a permanent yellow color that adds largely to the commercial value of the powder, and which

color I have been unable to obtain by the use of any other ingredient or ingredients. I have also been unable with the use of any other ingredient or ingredients to assist the chrysophanic acid in glazing the granules of the compound.

The difference in the effect of the curcumin and the chrysophanic acid in its use in the compound is, that curcumin in solution with chrysophanic acid produces the color and glazing of the particles, and prevents adhesion and excludes moisture, while the chrysophanic acid possesses, in addition to its glazing properties a marked affinity for oxygen at the time of explosion, and its presence adds to its detonating power, and further, its addition leaves the compound practically without residue after explosion. The compound when used with the chrysophanic acid in experiments and upon tests gives a much higher detonation than when omitted. It follows from the above, therefore, that neither one of these ingredients could be substituted for the other and that they have different uses though in a certain degree they jointly produce certain results by reason of affinity. No substitute has been found for either of these ingredients independently or in conjunction.

The method of mixing this compound imparts appreciable and added efficiency to the obtaining of perfect detonation at the time of explosion, independent of the detonation that would be obtained by haphazard intermingling of all of these ingredients in the percentages that are used in forming the compound.

I claim:—

1. The herein described explosive consist-

ing of potassium chlorate, a crystalline carbohydrate, hard wheat bolted flour, chrysophanic acid, and a coloring agent.

2. The herein described explosive consisting of potassium chlorate, sugar, hard wheat bolted flour, chrysophanic acid and a coloring agent.

3. The herein described explosive consisting of potassium chlorate, sugar, hard wheat bolted flour, chrysophanic acid and curcumin.

4. The herein described explosive consisting of potassium chlorate, cane sugar, hard wheat bolted flour, chrysophanic acid and a coloring agent.

5. The herein described explosive consisting of potassium chlorate, a crystalline carbohydrate, hard wheat bolted flour, chrysophanic acid, and curcumin.

6. The herein described explosive consisting of potassium chlorate, cane sugar, hard wheat bolted flour, chrysophanic acid, and curcumin.

7. The herein described composition of matter consisting of the following ingredients substantially in the proportions specified by weight: powdered potassium chlorate 736 oz., commercial cane sugar 480 oz., commercial hard wheat bolted flour 320 oz., chrysophanic acid 2 oz., curcumin sufficient to color.

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

VICTOR L. BEDIER.

Witnesses:

CASH COLE,
JO ROWE.