

UNITED STATES PATENT OFFICE.

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EXPLOSIVE.

993,211.

Specification of Letters Patent.

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No Drawing.

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To all whom it may concern:

Be it known that I, CARL WESTER, a citizen of the Kingdom of Sweden, residing at 160 Dronning Gatan, in the city of Helsingborg, in the Kingdom of Sweden, have invented a certain new and useful Explosive, of which the following is a specification.

This invention has reference to a new and improved explosive of the perchlorate type of explosive and pertains particularly to that class which contains perchlorate of ammonium as the most effective component.

It has been well known for a long time that perchlorate of ammonium possesses great explosive force but spontaneous explosions and the poisonous gases forming during the explosion and other deficiencies prevented its application in practice. It has been the aim to overcome the described deficiencies and to produce explosives with perchlorate of ammonium that may be safely transported and are not subject to spontaneous explosion during the storage of same. This has been accomplished in the present invention by compounding with the perchlorate of ammonium certain substances which render the novel explosive perfectly safe during transportation and storage and thus the novel explosive constitutes a so called safety explosive which is not easily decomposed nor does it give off any poisonous gases during the explosion and withstands atmospheric influences because it is not affected by heat, cold or moisture. Likewise shocks, blows or a fall such as occur during transportation or incidentally will not affect the explosive. Furthermore comparative tests have shown that the novel explosive is more effective than other explosives pertaining to this class and its manufacture is considerably cheaper than that of similar explosives so that the present explosive is a general commodity.

In preparing so called safety explosives of the perchlorate of ammonium type great care must be taken in the selection of proper constituents to be admixed therewith. Likewise great changes in the percentages are not desirable in a formula because the character and properties of an explosive are easily changed thereby and specific components and their relative proportion as to quantity impart desirable or undesirable qualities.

The present invention has for its object to produce a so called safety explosive of the perchlorate of ammonium type which may be safely transported, and used in a more effective manner at a reduced cost. This has been attained by compounding perchlorate of ammonium, $\text{ClO}_4(\text{NH}_4)$, with nitrate of sodium, NO_3Na , known as Chile saltpeter, dinitrobenzene, $\text{C}_6\text{H}_4(\text{NO}_2)_2$, and fine sawdust or wood meal which latter may be replaced to a small extent by a little vaseline.

The proportions in which the above enumerated components are compounded are substantially as follows:

35%	ammonium perchlorate $(\text{NH}_4)\text{ClO}_4$
45%	nitrate of soda (Chile saltpeter) NaNO_3
10%	dinitrobenzene $\text{C}_6\text{H}_4(\text{NO}_2)_2$
10%	sawdust.
100%	

If it is desired to use a little vaseline then 2% may be added and the proportion of sawdust is then correspondingly reduced to 8%.

The proportions of the ingredients above mentioned produce an explosive for rather general application. However the nature of the different kinds of rocks and deposits in quarries and mines is different and therefore the relative proportions of the several ingredients may be varied within reasonable limits according to the special application for which the explosive is desired. Sometimes it is required to blast a rock to pieces in a rather destructive manner, and in other cases blocks of rock should solely be separated and moved forward without any destructive effect so that the separated blocks may be split into plates like the slabs of marble. In the first instance a high explosive effect is necessary and in the second a rather retarded and slower effect is desirable. Variations in the percentages of the different components within reasonable limits and the mode of application render the novel explosive useful under the described different conditions and requirements.

I claim as my invention:

1. An explosive comprising substantially about 35% of perchlorate of ammonium, 45% of nitrate of sodium, 10% of dinitrobenzene, and 8-10% of fine sawdust.

2. An explosive comprising substantially about 35% of perchlorate of ammonium,

45% of nitrate of sodium, 10% of dinitrobenzene, 8% of fine sawdust, and 2% of vaseline.

5 3. A safety explosive comprising essentially about 35% of perchlorate of ammonium, 45% of nitrate of sodium, 10% of dinitrobenzene, 8% of fine sawdust and 2% of vaseline, existing in form of a dry com-

position and adapted to be worked up into cartridges. 10

In witness whereof I have hereunto set my hand in the presence of two witnesses.

CARL WESTER.

Witnesses:

TH. ERICSON,
REINOLD TOLL.