

UNITED STATES PATENT OFFICE.

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EXPLOSIVE.

1,028,951.

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, JAMES F. O'BRIEN, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented new and useful Improvements in Explosives, of which the following is a specification.

This invention relates particularly to an insulating compound or coating for an explosive; and it relates more especially to such a coating as is applicable to explosives of the class containing an alkali metal chlorate and a carbo-hydrate.

There are two main objects in supplying an insulation coating for explosives, namely; the actual and physical insulation of the different grains or bodies of explosive from each other; and the propagation of flame within a body of explosive made up of a number of grains or smaller bodies. I also, in the particular form of the coating about to be explained, include an oxidizer in the material of the insulation coating, which oxidizer materially helps in the propagation of the flame, chiefly perhaps by inducing the combustion of the combustible elements of the coating.

To fulfil the above-mentioned objects, my insulation coating comprises some material which will physically insulate one particle of explosive from neighboring particles and which is combustible in itself so as to propagate flame in an aggregate of particles. I have found it advisable to use an additional substance as an adhesive to cause the insulation coating to adhere closely to the explosive grains; and, in the particular specific case in view, I have used a carbo-hydrate as an adhesive, this carbo-hydrate entering easily into the chemical reactions caused by the combustion of the explosive itself, the explosive containing a carbo-hydrate as one of its principal constituents. In order to readily oxidize the combustible element of the insulation coating I also may provide an oxidizing agent in the coating. This is typically provided by a small amount of black oxid of manganese.

Although the constituents may be varied as well as the proportions in which they are used, the following is given as a typical constitution of my insulation material, as it is used in connection with my explosive containing a carbo-hydrate and an alkali metal chlorate as principal constituents. I use the

following proportions: carbon (coal, charcoal, or other form) 2 parts, black oxid of manganese 2 parts, sugar of milk (lactose) 1 part. A typical explosive on which this coating is used may be potassium chlorate 3 parts, sugar 1 part, with or without brick dust 2 parts.

Lactose is a carbo-hydrate and enters readily into any chemical reaction between the carbo-hydrate of the explosive proper and any other constituent thereof. It may be typical of any other carbo-hydrate which will form a mechanical adhesive. Carbon, in the shape of coal or charcoal finely powdered, is used as the body of the insulation material and as a propagator of combustion. In this sense it is typical of other similar materials; but it is particularly useful in my particular combination with a carbo-hydrate explosive as it enters readily into the chemical reaction which already (in the explosive itself) includes reactions with carbon. Black oxid of manganese may be typical of any other oxidizer which will give the reactions above described.

My insulation material may be applied to an explosive in many different manners; any method sufficing which will cause just enough of the insulation mixture to adhere to the explosive to completely cover its surface. I prefer, however, to apply the insulation mixture by placing the explosive in it while the explosive is in a somewhat doughy and damp condition, this method causing a sufficient amount of the insulation mixture to adhere without waste. In the preparation of my alkali metal chlorate carbo-hydrate explosive, and at the end of the mixing process, it is in the form of a heavy paste or dough. This dough is then cut up into small particles and, before being dried, is passed through the insulation applying apparatus where the particles come into contact with the insulation material in the form of a powder and pick up sufficient of this powder to thoroughly coat themselves. The explosive is then dried and is ready for the market.

Having described my invention, I claim:

1. In combination with an explosive containing an alkali metal chlorate and a carbo-hydrate, an insulator coating firmly adhering to the explosive particles and containing an inflammable material, an adhesive carbo-hydrate and an oxidizer.

2. In combination with an explosive containing an alkali metal chlorate and a carbohydrate, an insulator coating firmly adhering to the explosive particles and composed
5 of carbon, black oxid of manganese and sugar of milk.

3. In combination with an explosive containing an alkali metal chlorate and a carbohydrate, an insulator coating firmly adhering to the explosive particles and composed
10

of carbon two parts, black oxid of manganese two parts and sugar of milk one part.

In witness that I claim the foregoing I have hereunto subscribed my name this 26th day of September 1911.

JAMES F. O'BRIEN.

Witnesses:

CORA E. MONTGOMERY,
JAMES T. BARKELEW.